



**Háskólinn
á Akureyri**

Canada's Legal Requirements and Obligations for Search and Rescue in Nunavut

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Canada's Legal Requirements and Obligations for Search and Rescue in Nunavut

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Abstract

This study examines Canada's legal requirements and obligations for search and rescue (SAR) in the Canadian territory of Nunavut to determine the extent of Canada's efforts in fulfilling its international duties with regards to search and rescue in the Arctic. This study determines that Canada has a longstanding and well-established national search and rescue program, and understands well the intricacies and difficulties of search and rescue in its Arctic region. Both hard law and due diligence efforts support this conclusion, and are analysed in this study along with guidelines, standard operating procedures and best practices to illustrate Canada's holistic approach to their current and successful search and rescue program in Nunavut. Nevertheless, maritime traffic and activity in the Arctic waters of Nunavut are increasing. This study demonstrates that Canada's Federal Arctic search and rescue program in Nunavut is lacking in certain critical areas, attributable foremost to Canada's immense geographical scale and the difficulties of effectuating a comprehensive search and rescue program in the remote and challenging conditions of the Canadian Arctic. This thesis traces Canada's Arctic search and rescue policy and program to its contemporary form, and culminates with an analysis of how Canada's SAR program will cope in the changing decades to come.

*To my parents Leslie Wallace and Shirley Gross, and to my siblings Geoffrey
and Frances Wallace, in whose footsteps I've always endeavoured to follow*

Preface

The Canadian Arctic has long conjured up images of extreme hardship, desolation and exploration in the collective global memory. Historical expeditions from explorers such as John Franklin, Roald Amundson, John Rae and Viljalmur Stefansson painted the Canadian Arctic as a formidable, inhospitable place full of treacherous sailing conditions in the 17th and 18th centuries. Indeed, these tales illustrate the difficulties of navigation and operating in the Canadian Arctic experienced both then and now. Though maps, technology and institutional knowledge have improved, the Canadian Arctic still remains one of the most unforgiving maritime environments to traverse. However, there are those who have survived and thrived in such regions well before European explorers dared venture into Nunavut's icy waterways. The Inuit peoples have endured for centuries in the Arctic environment of Nunavut, and continue to inhabit these areas by successfully utilising their traditional knowledge and culture, and adapting new technologies to their advantage. Today, Canada recognises their obligation to provide search and rescue not only to the various industries and foreign operators in Canadian waters, but also to the Canadian people residing and operating locally within Nunavut's waters. As maritime traffic and interest in new industries (such as resource extractive industries and Arctic shipping) begin to increase, Canada's search and rescue program faces new problems, and must be prepared to adapt to meet the challenges of the ever-growing presence of human activity in Nunavut's dangerous waters. This study hopes to contribute to the greater body of emerging work on this subject, and help provide insight into answering the ultimate question: are we ready?

Claire Anne Wallace
Canada 2019

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Acronyms / Abbreviations

AO	Area of Operations
AOR	Area of Responsibility
ARCC	Air Rescue Coordination Centre
CAMSAR	Canadian Aeronautical and Maritime Search and Rescue Manual
CASARA	Civil Air Search and Rescue Association
CCG	Canadian Coast Guard
CCGA	Canadian Coast Guard Auxiliary
CCGS	Canadian Coast Guard Ship
CAF	Canadian Armed Forces
CJOC	Canadian Joint Operations Command
CMCC	Canadian Mission Control Centre
COMSAR	Sub-Committee on Radiocommunications and Search and Rescue
DFO	Department of Fisheries and Oceans
DGPS	Differential Global Positioning System
DND	Department of National Defence
ENDEX	End of Exercise
FCC	Final Coordination Conference
FER	Final Exercise Report
FIR	First Impression Report
GMDSS	Global Maritime Distress Safety System
GPS	Global Positioning System
IPC	Initial Planning Conference
IAMSAR	International Aeronautical and Maritime Search and Rescue
ICAO	International Civil Aviation Organization
ICSAR	Interdepartmental Committee on Search and Rescue
IMO	International Maritime Organization
JRCC	Joint Rescue Coordination Centre

LMSAR	Lead Minister for Search and Rescue
MEL/MIL	Main Event List and Master Incident List
MPC	Main Planning Conference
MCC	Mission Control Centre
MOU	Memorandum of Understanding
MRO	Mass Rescue Operation
MRCC	Maritime Rescue Coordination Centre
MRSC	Maritime Rescue Sub-Centre
M/V	Merchant Vessel
MSS	Maritime Safety Systems
NATO	North Atlantic Treaty Organization
NORDREG	Arctic Canada Traffic System
NOTSHIP	Notice to Shipping
NSS	National Search and Rescue Secretariat
OPV	Offshore Patrol Vessel
OSC	On Scene Coordinator
OSE	Officer Scheduling Exercise
POB	Persons on Board
PXD	Post-Exercise Discussions
RCC	Regional Command Centre
RCMP	Royal Canadian Mounted Police
ROC	Regional Operations Centre
RS	Rescue Specialist
RSMS	Regional Supervisor, Maritime SAR
SA	Situational Awareness
SAR	Search and Rescue
SAR Tech	Search and Rescue Technician
SAREX	Search and Rescue Exercise
SARNOCC	SAR Network Operations Control Centre
SARSAT	Search and Rescue Satellite-Aided Tracking
SARSUM	Search and Rescue Incidents Summary
SMC	SAR Mission Coordinator
SOLAS	Safety of Life at Sea (International Agreement for the Safety of Life at Sea)

SOP	Standard Operating Procedure
SRR	Search and Rescue Region
SRS	Search and Rescue Sub-Region
SRU	Search and Rescue Unit
STARTEX	Start of Exercise
TA	Training Audience
TC	Transport Canada
TMS	Traffic Management System
TSB	Transportation Safety Board of Canada
UHF	Ultra-High Frequencies
USAF	United States Air Force
USCG	United States Coast Guard
VHF	Very High Frequencies
VMS	Vessel Monitoring System
VTs	Vessel Traffic Services
PTA	Primary Training Audience
TO	Training Objective
TTX	Tabletop Exercise

List of Treaties

Arctic Council 2011, 'Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic' Arctic Council Secretariat, Tromsø; Norway, Art 2 (Arctic SAR Agreement)

International Convention for the Safety of Life at Sea (1 November 1974, EIF 25 May 1980) 1184 UNTS 3, V/33 (SOLAS)

International Convention on Maritime Search and Rescue, 1979 (27 April 1979, EIF 22 June 1985) UNTS 1405 Chapter 2.1.10 (1979 SAR Agreement)

International Maritime Organization International Convention on Salvage (1989, EIF 14 July 1996) UNTS 1953 Arts 10(1-3) (International Convention on Salvage)

United Nations Convention on the Law of the Sea (10 December 1982, EIF 16 November 1994) 1833 UNTS 397 Art 37 (UNCLOS)

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1 Introduction

We primarily think of search and rescue (SAR) as the practical, real-time delivery of actual search and rescue services – the ‘operational’ side so to speak. Indeed, effective search and rescue operations are the end goal of all SAR programs, and the principle mechanism for dealing with real emergency incidents and situations. However, search and rescue operations are rather the final culmination of multiple components, and not solely SAR operations, such as prevention, forecasting and preparedness efforts. The bulk of these elements are in fact conceptual by nature, in that they exist in writing rather than in reality. These conceptual elements might include things such as institutional knowledge, policies and theoretical formulations or predictions. The Canadian Coast Guard (CCG) for example, utilises mathematical projections to forecast the trends in Arctic maritime traffic in assessing their operational capacity to handle emergencies within their North. Such forecasts help the Coast Guard decide where best to allocate future resources. These conceptual elements are the key drivers behind the formation of national SAR policies.¹ However, what is the reasoning for countries to provide a search and rescue program to begin with? The foundation of national SAR programs and policies around the world is the *legal* basis for countries to provide search and rescue services.

There are multiple international conventions which stipulate the duties of a member state to provide search and rescue services. Based on what conventions states are party to, they are required to institute SAR programs to satisfy their various obligations as parties. International conventions with search and rescue articles often outline only the basic requirements that states are to provide, rather than an exhaustive list of obligations to fulfil. As a result, there is a great variety in the extent and scope of national SAR

¹ Bernard Funston, ‘Emergency Preparedness in Canada’s North: An Examination of Community Capacity’ (2014) 6.

programs occurring between countries. Additionally, best practices and policies for states is unique to themselves, and they may thus determine how best to proceed with their program based on their own individual circumstances. Determining if a state has 'met' its legal obligations therefore becomes somewhat subjective.

Normally, assessing the fulfilment by states of legal obligations within international law is challenging. Within domestic common law systems such as Canada (with the exception of Quebec), assessing critical gaps in the fulfilment of legal obligations may be done so by examining case law. Comparing cases in which participants have been found negligent or falling short of their legal obligations are then utilised as a comparative method to identify critical gaps and liability. Within Arctic search and rescue however, there are very few (if any) domestic or international cases concerned with the fulfilment of SAR obligations. Therefore, how do we assess whether an Arctic country is meeting its legal requirements to provide search and rescue in its area of responsibility (AOR)?

To answer this question, the Arctic country of Canada will be examined. Since the author has encountered a deficit in precedents and case law regarding this topic, this study will instead examine Canada's 'efforts' as a way to gauge the fulfilment of its legal responsibilities. These efforts will take form as two separate areas of study: (1) Canada's domestic law and legislation, and (2) Canada's due-diligence efforts and measures pertaining to Arctic search and rescue.

Within the analysis section of this thesis, the author will also be utilising the legal concept of due diligence as a method to measure Canada's efforts. Employing due diligence as a yardstick will be a concept explored in this thesis in an effort to try and quantify Canada's effort for analysis. It should be noted that the depth in which due diligence can be explored is limited by the scope of this study.

First, Canada's international legal responsibilities to provide search and rescue will be catalogued to illustrate the full extent of its international obligations. These various SAR treaties and articles will then be matched with Canada's corresponding domestic laws and legislation to verify the extent of Canada's formal ratification efforts. Establishing that domestic laws exist to corroborate Canada's ratification efforts is relatively straightforward. Much more difficult is establishing the *adequate* fulfilment of substantive

obligations. There are no standard measurements or thresholds to meet when determining sufficiency of fulfilment. Therefore, alternative measures must be utilised as indicators of Canada's fulfilment of its legal obligations. For this reason, Canada's due diligence efforts (policies, procedures and operational practices) regarding search and rescue will be analysed as a secondary component. As evidenced by other areas of international law, due diligence may serve as one component in determining the degree of a country's efforts to fulfil its various legal obligations.²

There is a difference between assessing Canada's efforts to meet requirements and assessing the performance of Canada's SAR regime.³ Evaluating the performance of SAR regimes is concerned with the operative component of search and rescue, examining data, results and logistical information to determine the success of a particular SAR regime. Due to limitations on scope, this thesis will not examine the performance of Canada's Arctic SAR program. Rather, this thesis will focus on the substantive (legal) component of Canada's search and rescue program to simply answer the question: is Canada meeting its international requirements for providing search and rescue in the Arctic?

This thesis will focus only on the maritime region of Nunavut. The SAR structure of Canada designates land-based emergencies to be addressed through provincial or territorial agencies, rather than federal operators. Search and Rescue in the maritime areas of the Canadian Arctic is governed and managed jointly by the Canadian Coast Guard (marine) and the Canadian Armed Forces (air). Although the Canadian Arctic features land and land-based emergencies, this thesis will only address marine emergencies as they fall under federal jurisdiction. The two agencies examined in this study as it pertains to maritime search and rescue in Nunavut will be the Canadian Coast Guard (CCG) and the Canadian Armed Forces (CAF). Although aeronautical emergencies happen both on land and at sea in the Canadian Arctic, this thesis will focus exclusively on maritime emergencies and discuss only very briefly aeronautical emergencies if they are to occur in Nunavut's maritime

² Due diligence is a generally accepted concept in areas of international law such as environmental law and human rights law. States must understand and manage possible hazards and initiate preventative action to prevent harm. Due diligence efforts are thus examples of intent of the state.

³ A.K. Sydnies et al, 'International Cooperation on Search and Rescue in the Arctic' (2017) *Arctic Review on Law and Politics* 109, 126.

region. This thesis will be concerned with the field of air/sea search and rescue and disregard other types of search and rescue and terrains.

For the purposes of restricting scope, this thesis will deal exclusively with SAR as the prevention of loss of human life. This study will not assess or address the environmental component of Arctic search and rescue or the various additional environmental conventions to which Canada is a party.

There are a number of limitations to acknowledge regarding this study. The first is the amount of information analysed during the researching of this thesis. While the author is confident in the scope of documents examined and research conducted, constraints on the scale and time of this thesis project prevents an exhaustive scrutiny of all documents in existence pertaining to this topic.

Secondly, due to limitations on scale, this thesis does not conduct an extensive nor comprehensive study into Canadian law and legal systems. This thesis is not meant as a legal tool or document to use in the overall examination of Canada's legal conduct.

The conclusions of this thesis cannot necessarily be applied to other search and rescue programs and are the subjective assessment of a single scholar.

2 Introduction: SAR in the Canadian Arctic

2.1 What is Arctic SAR?

Generally, search and rescue as it occurs around the world can be understood in its basic form as: "comprising the search for, and provision of aid to, persons, ships, and other craft which are, or are feared to be, in distress or imminent danger".⁴ There are numerous types of emergencies and terrain in which an emergency posing a threat to human life may occur. As a result, there are different types and sub-fields of search and rescue, including but not limited to: mountain search and rescue, ground search and rescue (including urban search and rescues), combat search and rescue on the battlefield and air-sea rescue on the water.⁵ For Canada, the main national search and rescue objective is to:

"Prevent loss of life and injury through SAR alerting, responding and aiding activities that use public and private sources. Where possible and directly related thereto, reasonable efforts will be made to minimize damage to or loss of property. Through prevention measures focused on owners and operators most commonly involved in SAR incidents, the National SAR Program will attempt to reduce the number and severity of SAR incidents."⁶

⁴ National Defence Fisheries Oceans Canada 'National Search and Rescue Manual' (2000) 3.

⁵ National Defence Fisheries and Oceans Canada, 'Canadian Aeronautical and Maritime Search and Rescue Manual' (CAMSAR) (2014) Sec. I-1.01 (E) p.1 of 2.

⁶ *ibid.*

How is Arctic search and rescue different from search and rescue in other regions of the world? Arctic search and rescue still has the same objective as other search and rescue systems globally – to prevent the loss of life. Arctic SAR features the same system of cooperation between national SAR programs found in all regions the world. However, there are different factors within the Arctic that affect the functionality of Arctic SAR and how countries approach SAR in the North.

The Arctic is a distinctive operating environment, and raises its own unique set of challenges regarding effective search and rescue. The Arctic region is a vast, geographical area spanning multiple countries to include both the Arctic Ocean and encircling northern land masses. There are multiple ways to define or delineate the boundaries of the Arctic; ecologically, politically or anthropologically for example (Figure 1). The Arctic defined by the ecological boundary is found at the 66°33'47.5N latitude, and is the common boundary to utilise in the scientific studying of the Arctic region.⁷ The political boundary however (known as the Arctic Circle) is usually employed in the social studies of the Arctic region. The territorial limits of which includes all water and land situated north of 66°33'N.⁸ The Arctic area maintains a distinct climate, biology and ecology, separate from other regions found around the world.

The Arctic region is most notably characterised by its cold climate and remoteness. For vessels, aircrafts and people operating in the Arctic, the North is fraught with difficulties and risks. Living, operating and working in the Arctic has always been difficult, and will continue to prove challenging due to winter darkness, remoteness, weather, limited infrastructure, under-developed navigation and communication services, among other factors.⁹ Due to these special challenges, Arctic search and rescue has evolved to meet these challenges, and features a greater cooperative effort between nations than elsewhere in the world. Recognizing the inherent uniqueness of polar conditions demands a different approach to search and rescue. As a result, nations, operators and SAR actors have purpose-built a search and rescue

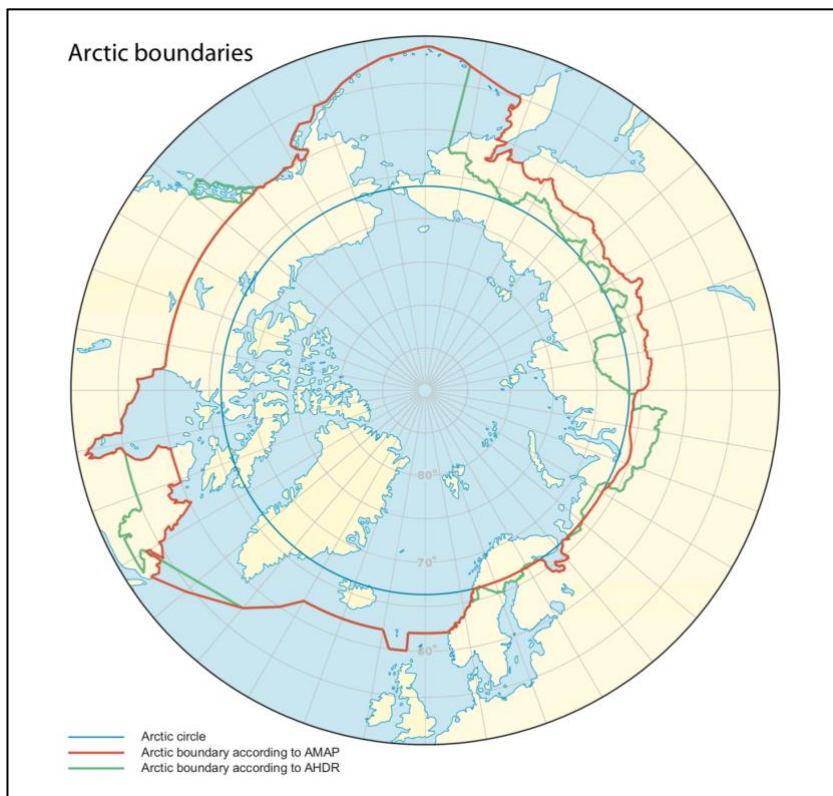
⁷ As of February 28th 2019, the boundary of the Arctic Circle is 66°33'47.5.

⁸ Arctic Council Arctic Monitoring and Assessment Programme (AMAP), 'Arctic Boundaries' (Arctic Council) <<https://arctic-council.org/images/PDFAttachments-/Maps/boundaries.pdf>> accessed 14 April 2019.

⁹ Funston (n 1) 7, a comprehensive list of the risks facing Arctic operations and Arctic search and rescue is provided in the following section.

system to reflect the unique problems of SAR operations in the Arctic. As human activity in the Arctic increases, a large component of the Arctic search and rescue regime revolves around emergency preparedness, not only emergency response.

Figure 1. The Various Arctic Boundaries ¹⁰



The boundaries of the various definitions of the Arctic, including the 'political' boundary (blue) the 'ecological boundary' (red) and the 'human' boundary (green).

¹⁰ Arctic Council Arctic Monitoring and Assessment Programme (AMAP), 'Arctic Boundaries' (*Arctic Council*) <<https://arctic-council.org/images/PDF-attachments/Maps/boundaries.pdf>> accessed 14 April 2019.

In addition to environmental differences, Arctic search and rescue is unique in the respect that it features a regional search and rescue specific treaty. The Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (the Arctic SAR Agreement) considers the special circumstances of conducting SAR in the Arctic, and goes one step further than other international SAR conventions to adjust for Arctic challenges. Signed in Greenland in 2011, this supplementary convention was the first legally binding agreement negotiated under the auspices of the Arctic Council and addresses the ability of the parties to provide mutual assistance and conduct joint SAR operations.¹¹ The Arctic Council SAR Agreement assigns an area of the Arctic for which each party member is responsible for assuming the lead on operations when responding to search and rescue incidents. Notably, the Arctic Council SAR Agreement also commits member states to address the growing SAR needs in the Arctic region.¹²

Types of Arctic Emergencies

A large component of search and rescue is concerned with the safety of human life in emergency situations. Arctic emergencies can involve both local and outside operators. Arctic emergencies caused by the activities of community residents or other northern residents are usually dealt with by local services in the normal course of life within the North. The sorts of emergencies typically managed by local authorities and infrastructure include lost or stranded residents or tourists, small vessel rescues, medical emergencies as well as emergencies caused by weather or other natural events in or near communities.¹³ Such events are usually within the normal scope of incidents for northern communities, and their capacity to attend to these local incidents is generally by way of standard services already in

¹¹ Sydnes et al (n 3) 111.

¹² Arctic Council, 'Task Force on Search and Rescue' (*Arctic Council*, 1 January 2016) <<https://arctic-council.org/index.php/en/task-force/71-tf-sar>> accessed 3 November 2018.

¹³ Funston (n 1) 8.

place.¹⁴ Even if improvements can be made, national search and rescue programs prepare for certain frequencies and scales of emergencies. Anything outside this realm risks taxing or, in some cases, far exceeding the local search and rescue capacities. In this regard, Arctic emergencies caused by non-residents or external operators are of far greater concern. Often ill-equipped to address large-scale emergency events, local communities can be unable to effectively manage emergencies involving high amounts of people. Unfit to absorb large numbers of non-residents (say in the case of a cruise ship stranding), these events can cause food, shelter, and fuel shortages among other issues.¹⁵ The sudden appearance of stranded passengers in Kugluktuk from the grounded cruise ship *Clipper Adventurer* in 2010 is an example of this sort of “inundation event”. The stranding of *Clipper Adventurer* alerted Canadian authorities to the gap in the local capacity for dealing with such large-scale events from outside operators.¹⁶ In reference to this issue, the importance of maintaining an over-arching, effective national search and rescue program becomes apparent. There is a need for ice-breaker vessels, airplanes and national coordination services to fill the gaps in local capabilities. This is key to successfully address incidents of scale throughout the Canadian Arctic, especially those occurring far from existing services. Arctic countries are somewhat prepared for emergency situations in the Arctic region. There is high awareness of the challenges involved and contingency planning has been set in place for big events. Much of this comes from institutional/historical knowledge of SAR risks and operations in Arctic regions.¹⁷ However, all eight Arctic nations have agreed amongst themselves and gone on record to express the overall need for better search and rescue services in the Arctic.¹⁸

In addition to marine accidents and local emergencies, other SAR emergencies that can occur in the Arctic may involve: industries (such as drilling platform accidents), aircraft accidents, or land based human activities

¹⁴ *ibid* 19.

¹⁵ Brad Judson, “Trends in Canadian Arctic Shipping Traffic-Myths and Rumours” (2010) In *The Twentieth International Offshore and Polar Engineering Conference* International Society of Offshore and Polar Engineers 5.

¹⁶ Funston (n 1) 20.

¹⁷ Emmi Ikonon, ‘Arctic Search and Rescue Capabilities Survey; Enhancing International Cooperation 2017’ (2017) Finnish Border Guard 11.

¹⁸ *ibid*.

(such as land-based tourism). The combinations and types of emergencies are therefore endless, which is something that makes it difficult to be prepared.

In Canada, emergencies are not always easy to define. In the context of search and rescue, the Government of Canada's Quadrennial Search and Rescue Review recognizes that:

"Information on the rate of search and rescue incidents, their nature, and the effectiveness of the National Search and Rescue Program response varies widely from jurisdiction to jurisdiction. At the most fundamental level, there is no commonly used definition of what constitutes a "SAR incident."¹⁹

Nonetheless, for the purposes of this study, a SAR incident will be referred to as an emergency (marine, aeronautical or land-based) in which the safety of human life is directly threatened. As mentioned in the scope, this thesis will only address emergencies occurring in the marine territories of Nunavut.

Arctic Operators and Risks

Operators

When discussing Arctic operations, we should recognize (1) the distinct types of operators in the region and (2) the varying levels of maritime activities throughout the different parts of the Arctic.

Firstly, there are distinct types of maritime operators in the Arctic region. Overall, the primary sorts of operators in the Arctic are: tourism, transportation and destination shipping, resource extraction and exploration industries, science and research, military, and local operators such as domestic industry and resident activity. The corresponding vessels for each operator in the Arctic include tourism-related vessels, transport vessels such as liquefied natural gas (LNG) and oil tankers, bulk ships and container vessels, offshore service and exploration vessels, research vessels, naval fleets including submarines, and personal pleasure crafts (Figure 2).²⁰

Secondly, Arctic waters experience different types of activity depending on the possibilities of each economic area and corresponding

¹⁹ Funston (n 1) 10.

²⁰ Ikonon (n 17) 4.

national interests.²¹ For example, the Russian Barents Sea experiences cargo and shipping traffic related to mining and oil and gas transport, in line with Russia's vision of developing the Northern Sea Route (NSR), whereas Svalbard is experiencing an increase in tourism traffic, and Canada's Northern waters are mainly traversed in order to re-supply communities and actively used for local fishing and hunting.²² Most of the determining factors of regional operator traffic and types are related to the environment, including factors such as sea-state conditions and sea ice affecting accessibility or navigability/bathymetry of particular sea routes. The sea conditions and climate of the Arctic region are far from uniform. The variety of regional differences in the Arctic is immense. In some areas of the Arctic, for example the Canadian Arctic, the extent of sea ice coverage and shallowness of the internal waterways make it an unlikely area to develop for large-scale shipping, compared to the relatively deep and ice-free Northern Sea Route.²³

However, there are additional factors that determine where industry and maritime traffic occurs. Geopolitical and governance factors such as regulatory frameworks and environmental protection have influence. The recent moratorium on offshore oil and gas development in the Arctic by Canada for example, will temporarily prevent extractive industry build-up despite potential interest.²⁴ The infrastructure factors and the speed with which new infrastructure develops will also dictate where marine traffic will occur. For the most part, marine operators require at least some basic infrastructure, despite being somewhat self-supporting. Ports to refuel and exchange goods are required to support certain shipping activities, along with rescue and support infrastructure to provide safety. In this sense, the degree of infrastructure in a particular region is connected to operator traffic in the different Arctic regions. Other external factors, such global market demands

²¹ *ibid* 3.

²² *ibid* 4.

²³ Ikonon (n 17) 4.

²⁴ Dan Healing, 'Canada, U.S. to Ban Offshore Oil and Gas Licences in Arctic Waters' (*CTV News*, 20 December 2016).

<<https://www.ctvnews.ca/canada/canada-u-s-to-ban-offshore-oil-and-gas-licences-in-arctic-waters-1.3211436>> accessed 3 November 2018

and financial profitability as well as sector specific demand, may also affect where nations establish infrastructure.²⁵

Figure 2. Description of Vessel Types Found in Arctic Canada

Classification	Description	Examples of ship types
Government vessels and icebreakers	<ul style="list-style-type: none"> • Vessels designed to move and navigate in ice-covered waters • Vessels with a strengthened hull, an ice-clearing shape, and the power to push through ice 	<ul style="list-style-type: none"> • Coast Guard vessels • Icebreakers (private, research, government) • Research vessels
Container ships	<ul style="list-style-type: none"> • Cargo ships that carry their load in truck-size containers 	<ul style="list-style-type: none"> • Cargo transport vessels
General cargo ships	<ul style="list-style-type: none"> • Ships that carry various types and forms of cargo 	<ul style="list-style-type: none"> • Community resupply ships • Roll on/roll off cargo ships
Bulk carriers	<ul style="list-style-type: none"> • Ships that can carry either oil or loose or dry cargo in bulk (but not simultaneously) 	<ul style="list-style-type: none"> • Timber carriers • Oil, ore carriers • Automobile carriers
Tanker ships	<ul style="list-style-type: none"> • Ships designed for bulk carriage of liquids or compressed gas 	<ul style="list-style-type: none"> • Oil, natural gas, and chemical tankers
Passenger ships	<ul style="list-style-type: none"> • Ships that carry passengers for remuneration 	<ul style="list-style-type: none"> • Ocean liners • Ferries • Cruise ships
Pleasure craft	<ul style="list-style-type: none"> • Recreational vessels that do not carry paying passengers 	<ul style="list-style-type: none"> • Motor yachts • Sailboats • Rowboats
Tugboats and Barges	<ul style="list-style-type: none"> • Tugboats: small boats designed for towing, pushing, or general work duties • Barges: Large, flat, non-propelled vessels to carry bulk cargo or mixed cargo 	<ul style="list-style-type: none"> • Resupply vessels • Bulk cargo transport vessels
Fishing vessels	<ul style="list-style-type: none"> • Vessels used in commercial fishing activity and small vessels (30–100 m long) used for fishing 	<ul style="list-style-type: none"> • Trawlers • Whaling boats • Fish-processing boats
Oil and gas exploration vessels	<ul style="list-style-type: none"> • Vessels designed specifically for exploration and extraction of natural gas and oil 	<ul style="list-style-type: none"> • Seismic, oceanic, and hydrographic survey vessels • Oil drilling/storage vessels • Offshore resupply vessels • Portable oil platform vessels • Other oil and gas support vessels

¹ Sources: Pizzolato et al. (2014) and Dawson et al. (2017).

Risks

There are a series of key challenges that may affect maritime operations in all areas of the Arctic. These challenges are major risks for operating in polar waters and include long distances, severe and uncertainty of weather, remoteness, ice and cold conditions, poor communication networks, lack of infrastructure and a lack of search and rescue resources in the region.

²⁵ Ikonon (n 17) 4.

As a marine operational environment, the Arctic is often characterized as complex and risky. Despite the different regional environments, all parts of the Arctic can expect the presence of these challenges. However, there are differences in the degree and frequency in which these challenges may occur from region to region. The risk and incident types vary between different Arctic countries which all possess their own characteristics, such as their location, level of human activity, ice and weather conditions, uncharted waters and infrastructure in their Arctic region. For example, vessels sailing in Northern Norway or Svalbard in the summer can be fairly certain to sail in open seas, so being stranded by ice is less of a risk, whereas the risk of grounding, fire, and difficult weather should be carefully assessed. The risk of an oil spill from offshore oil and gas fields might also be more of a priority for Norway and Russia than for, say, Greenland. Then again, for Greenland, uncharted and shallow waters as well as ice conditions result in groundings, collisions with ice and, in many cases, hull damage to boats. As some parts of the Arctic, such as Northern Canada, have very little activity and sparse populations, the risk levels and possibilities of major incidents are also low. As another example, the Northern Baltic Sea is fairly busy, so the risk of colliding with other vessels and of fire on board is highly relevant.²⁶

Maritime Traffic

Current Arctic Maritime Traffic

In 2015, Canada's international marine trade was valued at \$205 billion.²⁷ With three distinct coastlines, Canada has and will likely remain heavily reliant upon marine trade and transport. Canada's Arctic, consisting of remote communities and complex waterway networks, is heavily dependent on the marine transportation and shipping industry. Indeed, most of the cargo ships in Canada's North are currently tasked with the resupplying of northern communities. However, many types of marine vessels currently operate in the Canadian Arctic, contributing to the overall marine traffic in the Canadian

²⁶ Ikonon (n 17) 10.

²⁷ Jackie Dawson, Larissa Pizzolato, Stephen Howell, Luke Copland, and Margaret E. Johnston, 'Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015' (See Article Tools) (2018) Arctic 71 15-26, 15.

Arctic. The fastest growing marine shipping sector in Arctic Canada, for example, is that of pleasure/passenger ships.

Future Arctic Maritime Traffic

Given the rapid warming of the Arctic region and the increased activity of operators, Arctic maritime traffic is expected to continuously increase. In order to plan safe shipping corridors, develop infrastructure, predict shipping trends and allocate resources accordingly, consistent data for marine traffic in Arctic Canada is required. Unfortunately, there exists very little in the way of temporal and special shipping data for Canada's North. The lack of statistical information on this matter has, some argue, slowed pre-emptive development with regards to preparatory government action. Recognising this critical gap, researchers from the University of Calgary set out to document and publish ship traffic patterns in Canada's Arctic from 1990 to 2015. Looking identify the trends and areas of future growth, this study determined that "the distance travelled by ships in Arctic Canada nearly tripled (from 364179km in 1990 to 918266 km in 2015), that the largest proportion of ship traffic in the region is from general cargo vessels and government icebreakers (including research ships), and that the fastest growing vessel type by far is pleasure craft (private yachts)."²⁸ The study was also able to link particular vessel traffic growth with specific geographical areas, noting that "spatial shifts in vessel activity over the last quarter century have favoured areas with active mine sites, as well as the southern route of the Northwest Passage. As a result, some communities, including Baker Lake, Chesterfield Inlet, Pond Inlet, and Cambridge Bay, are experiencing greater increases in ship traffic."²⁹

The seasons for Arctic maritime operations, such as shipping and tourism, are not only extending in length but the accessibility of the Arctic for activities such as resource extraction and infrastructure build-up is also increasing. Additionally, new technological innovations and vessel designs offer icebreaking capacity to cargo ships, cruise vessels and research vessels, effectively extending their operational season and activity beyond what was their former range.³⁰ Although perhaps the increased accessibility of the Arctic Ocean is the "new normal" to expect in the future of Arctic operations,

²⁸ Dawson, et al (n 27) 15.

²⁹ *ibid.*

³⁰ Ikonon (n 17) 13.

it is still a recent notion. The result is that suddenly, emergency preparedness authorities must be ready to extend their seasonal presence in parts of the region where the fleet might otherwise be in service only during the summer.³¹ As search and rescue is primarily concerned with the safety of human life, the increase in cruise vessel traffic is one of the key concerns for many Arctic countries, especially as such vessels are growing in size and passenger counts. In the summer of 2016, the cruise liner MV Crystal Serenity sailed the Northwest Passage with more than 1000 passengers and some 500 crew. The unprecedented transit of a vessel this scale through the Passage was one of the most discussed and observed developments regarding Arctic maritime traffic.³² Since 2004, the Northwest Passage has seen a 166% increase in vessel traffic.³³ Although contingency planning and emergency preparedness were carefully considered and rehearsed, the voyage still raised a great deal of concern for passenger safety and the environment. As the Crystal Serenity transit was a success, many have predicted a further increase in large cruise ships transiting through the Bearing Strait and Beaufort Sea. From a SAR perspective, the increase in tourism vessel traffic is probably the most worrying development in the Arctic. A large-scale emergency requiring a mass rescue operation (MRO) would be a worst possible scenario for Arctic nations, considering both the distances to the nearest coast guard stations and hospitals and the lack of shore-side services for rescued passengers.

Challenges of Arctic Search and Rescue

For the many risks to operators functioning in the Arctic regions, there is an equal number of challenges facing search and rescue in the Arctic. In 2017, the Arctic Coast Guard Forum (ACGF), a multi-national cooperative organization for Arctic search and rescue, conducted a survey that concluded a comprehensive list of challenges and problems of Arctic SAR (figure 3).

³¹ Ikonon (n 17) 5.

³² *ibid* 7.

³³ Harry Wilson, 'Mapping Arctic Corridors' (*Canadian Geographic*, 6 July 2016) <<https://www.canadiangeographic.ca/article/mapping-arctic-corridors>> accessed 8 October 2018.

Figure 3. Arctic Coast Guard Forum (ACGF) identified challenges of Arctic SAR

1. Long distances, limited presence of resources and lack of infrastructure pose the main challenges for Arctic maritime and aeronautical search and rescue, from both national and international perspectives.
2. Severe weather, darkness and ice conditions are an inevitable part of the Arctic operational environment, but create enhanced risks and challenge for Arctic SAR operations.
3. The gap in communications networks and connections is recognised. There is a need for a proper satellite broadband connection, satellite AIS, radio towers and other communications infrastructure to support SAR operations. From the perspective of international cooperation, this impedes situational awareness and efficient coordination during multinational operations.
4. The challenge involved in sharing information internationally, between authorities, and with other stakeholders, is identified.
5. The development of survival and rescue equipment for survival in Arctic conditions, particularly when abandoning ship in icy seas, should be further encouraged.
6. Most Arctic countries have limited capacity to host patients near possible accident locations. Related issues include hospital capacity, lack of medical help, patient registration, and the coordination of foreign patients, particularly if they do not share languages in common.
7. There is no comprehensive education plan specifically intended for Arctic SAR. Most Arctic countries are interested in developing joint courses and training specific to Arctic conditions.

8. Knowledge of Arctic SAR capacities and the active participation of the industry in Arctic maritime safety issues could be improved. Greater cooperation with private operators would also leverage the understanding of well-planned Arctic shipping and tourism.³⁴

With respect to Arctic search and rescue, it is important to differentiate between the type and scale of incidents. Large cruise vessels are of the greatest concern to search and rescue authorities and, in the event of an incident would require extensive national and international efforts. Mass rescue operations (MROs) such as groundings or fires on board large cruise vessels often struggle to find enough resources to cope with the scale of the emergency situation.³⁵ Due to their remoteness and small size, most Arctic communities have a limited capacity to host patients near possible accident locations. A lack of hospital capacity, lack of medical help, issues in registration of patients, and the coordination of foreign patients (particularly if they do not speak the same language) are all limitations to consider. Small communities rarely have large hospitals with the capacity to host an entire cruise ship full of passengers and so such mass rescue operations and major incidents near small communities in the Arctic could be overwhelming and take up communities' own resources.³⁶

As maritime activity increases in the Arctic region, the risk of a major emergency event becomes more likely. If an MRO incident were to occur in the Arctic, the Arctic countries have acknowledged that any one country's SAR capabilities would not be adequate in handling the incident alone.³⁷

Other types of incidents to occur in the Arctic may include smaller vessels and accidents or incidents occurring on sea ice.³⁸

³⁴ Ikonon (n 17) 47.

³⁵ Ikonon (n 17) 21.

³⁶ *ibid* 23.

³⁷ *ibid*.

³⁸ Sea ice, while reflecting similar properties as land terrain, is for operational and legal purposes regarded water, thus the sea. As technically the sea, sea ice and incidents on sea ice fall under the jurisdiction of federal search and rescue.

2.2 Future Risks and Importance

Arctic search and rescue has always been important, especially to those living and operating in Northern latitudes. For them, the accessibility and existence of an adequate search and rescue program is a critical component of life in the North. The involvement of indigenous peoples in the federal search and rescue program will be examined in a later section.

Arctic coastal states recognize that the continuation of Arctic search and rescue programs are a necessity for the safety of their citizens, and improvements to the program are constantly being pursued and explored. Canada's North, along with other nations, is experiencing an outflow of people from smaller communities to larger cities. With (often) young people pursuing opportunities in the larger metropolises, the population decline experienced by some small Arctic communities is acutely felt by way cultural loss and economic deterioration. Despite efforts to combat the loss of populations from rural areas of the Arctic, it is expected to continue into the foreseeable future.³⁹ While smaller communities may be experiencing population loss, people may not necessarily be migrating out from the Arctic region itself. Although the rural populations of the Arctic are unlikely to increase, the distribution of where people are moving is not exactly uniform, nor easily predictable. Still, this does not imply that countries may get away with lesser search and rescue programs for their localities in the future. While reforms may be made to accommodate changes in population demographics, countries will always be required to provide an adequate SAR service so long as there are people living there.

Regardless of the changes in population distributions in the Arctic, the growing trend in the number and variety of outside operators in the Arctic is recognised and absolute. The Arctic SAR Agreement was meant to reflect the Arctic region's growing economic significance as a result of its improved

³⁹ Gregory F. Finnegan, 'Canadian interprovincial employees in the Canadian Arctic: a case study in fly-in/fly-out employment metrics, 2004-2009' (2014) *Polar Geography* Vol. 38 175.

accessibility due to global warming.⁴⁰ Although created in 2011 to address this growing trend, the 8 years since its conception has only seen a greater increase in Arctic economic activity.⁴¹ Now more than ever, the importance of adequate Arctic search and rescue is abundantly clear. National search and rescue programs require progress to accommodate this unparalleled regional growth.

There are many ways in which coastal states are seeking to shore-up their Arctic search and rescue. Some countries have chosen to increase national expenditure, targeting domestic infrastructure and expanding budgets in the North as a method to address growing Arctic activities.⁴² Other countries are taking alternative approaches apart from straightforward capital spending. Canada, for example, has made large efforts to streamline its SAR operations and procedures in an effort to increase effectiveness, and have generated a huge body of “paperwork” to this effect.⁴³ Each nation is experiencing separate and unique industry build-up within its Arctic borders. With potential revenues from the oil and gas sector as well as possibilities in shipping, tourism, research, mining and fisheries, these activities are growing as viable industries to increase operations across different Arctic maritime domains.⁴⁴ The different approaches by nations to address this aside, all Arctic nations are firm on the same opinion that Arctic search and rescue needs to advance in order to address the growing concerns of an industrialized Arctic.⁴⁵ To achieve this, Arctic nations have long recognised the need for international and regional collaboration. Not only to flesh out

⁴⁰ Farré Buixadé, Scott R. Albert, Linling Chen, Michael Czub, Ying Dai, Denis Demchev, Yaroslav Efimov, et al, ‘Commercial Arctic Shipping through the Northeast Passage: routes, resources, governance, technology, and infrastructure’ (2014) *Polar Geography* 37.4, 298-324.

⁴¹ Arctic Council 2011, ‘Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic’ Arctic Council Secretariat, Tromsø; Norway, Art 2 (Arctic SAR Agreement)

⁴² Jane Taber ‘Harper breaks ice on Arctic sovereignty’ (*The Globe and Mail*, Updated 22 April 2018) <<https://www.theglobeandmail.com/news/national-/harper-breaks-ice-on-arctic-soveriegnty/article991511/>> accessed 22 September 2018.

⁴³ Funston (n 1) 17.

⁴⁴ Ikonon (n 17) 1.

⁴⁵ Emmi Ikonan and Irene Andreassen, ‘Report from the Fourth Joint Arctic SAR Workshop and TTX’ (2019) Association of Arctic Expedition Cruise Operators (AECO).

any operational deficiencies for search and rescue incidents, but to contribute to the overall Arctic SAR regime and common institutional knowledge. This has resulted in several cooperative achievements being realised in the standardising and operation of Arctic search and rescue. Countries have committed efforts in a variety of forms to fortify Arctic SAR collaboration through information sharing and exercises which act as the centrepiece of practical cooperation.⁴⁶

The rapidly changing Arctic environment is continuing to contribute significantly to major physical, ecological, social, and economic changes in the North. The trajectory of Arctic industry development is primarily the result of the changing physiology and accessibility of the Arctic ocean. The maritime areas in the Arctic region are experiencing an increase in the amount of marine and aeronautical traffic, as a report from the Arctic Coast Guard Forum (ACGF) surmises: “Not only during the summer season when the sea ice extent is decreasing, passages and lanes open up, the days are longer and the operating environment seems manageable, but also during the winter season.”⁴⁷

The Arctic Climate Impact Assessment (ACIA) found a 2 million square decrease in Arctic sea ice coverage in half of a century, with some climate change models predicting a plausible Arctic Ocean ice-free period during the summer season as early as 2040, if not sooner.⁴⁸ The ACIA identifies rising Arctic temperatures to cause the melting of Arctic multi-year sea ice in addition to decreased first-year sea ice coverage and thickness.⁴⁹ As a result, extended periods of navigation and increased access to sea routes in the Arctic ocean is projected, with the Arctic Marine Shipping Assessment (AMSA) concluding an increased feasibility and possibility of growing commercial shipping in the Arctic.⁵⁰ The decrease in sea ice coverage has generated great interest in the possibility of new industries, such as the utilisation of new and existing shipping routes for shorter transit times in the interest of saving fuel and valuable time. The continuous loss of sea ice is

⁴⁶ Sydnes et al (n 3) 127.

⁴⁷ Ikonon (n 17) 10.

⁴⁸ Arctic Climate Impact Assessment, *Impacts of a Warming Arctic-Arctic Climate Impact Assessment* (first published 2004, Cambridge University Press) 144.

⁴⁹ *ibid.*

⁵⁰ Arctic Council, 'Arctic Marine Shipping Assessment Report 2009' (2009).

predicted to yield an increased length of the summer navigation season, and a decrease in the coverage and thickness of first-year sea ice. Projections of changing conditions by the middle of the current century predict transpolar routes bypassing the North East Passage and Northwest Passage to become commercially viable.⁵¹

However, despite the changing Arctic climate and its promise of increased accessibility, there are other operational risks that manifest alongside. The Arctic ocean, for example, is predicted to remain ice-infested with icebergs, bergy-bits and growlers in the summer months despite the term "ice-free". The decrease in sea ice is likely to increase the obstacles to ships, such as more volatile weather and storms, and unpredictable conditions especially with regards to shipping routes, which face increased remoteness and distance from search and rescue capabilities. While sea ice melt may present apparent opportunities in increased accessibility for current seas that are ice-prone, such as the coasts of Greenland, Canada and Russia, dramatic melt may contribute to new operational challenges.⁵² Sea ice increases ocean surface stability and its reduction is expected to result in larger waves due to increased fetch distances, likely causing an increase in severe storms while at sea, posing new hazards to Arctic maritime operations.⁵³

The increase in operations in the Arctic requires more competence and capabilities from the industry, governments and volunteer organizations regarding safety and preparedness in the Arctic region.⁵⁴ Although the intensity of maritime traffic in the Arctic remains low, activity levels will increase as climate change and new technology offers more opportunities for vessel traffic in the region. The possibilities of incidents in the maritime Arctic will increase alongside this development.

Another smaller but equally growing risk group involves adventure tourists attempting to cross Arctic waters or ice sheets on kayaks, skis and sometimes even jet skis, for example. In recent years, there have been cases involving kayakers in the Bearing Strait and a group attempting to cross the

⁵¹ Charles Emmerson and Glada Lahn, 'Arctic opening: Opportunity and risk in the high north' (Lloyd's, 2012) 31.

⁵² Malte Humpert and Andreas Raspotnik, 'The future of Arctic shipping along the transpolar sea route', *Arctic Year Book* 2012(1), 281-307, 281.

⁵³ Emmerson and Lahn (n 51) 33.

⁵⁴ *ibid.*

Northwest Passage on jet skis. Both groups became stranded by ice and the Coast Guard was called out for rescue operations.^{55 56}

2.3 Nunavut's SAR Challenges

Nunavut's Composition

Canada's coastline is the longest of any country in the world.^{57 58} The bulk of the Arctic coastline is covered by the territory of Nunavut, situated between the latitudes of 70.2998° N, 83.1076° W. Nunavut comprises 1,936,113 km² of land and 157,077 km² of water in Canada's North.⁵⁹ The majority of Nunavut is comprised of national parks and reserves divided into three distinct physiographic regions, the Hudson Bay Lowlands, the Canadian Shield and the Arctic Lands.⁶⁰ Nunavut's Arctic archipelago contains 5 of the world's 30 largest islands and an incredible variety of distinct marine environments (Figure 4). The Canadian Arctic has a vast and incredible coastline and marine territory to service.⁶¹ Although the second least

⁵⁵ Maisie Thomas, 'Coast Guard Rescues British Explorer from Bering Strait Waters' (*The Nome Nugget*, 14 March 2016)

<www.nomenugget.com/news/coast-guard-rescues-british-explorers-bering-strait-waters> accessed 14 February 2019.

⁵⁶ Tristin Hopper 'Reality TV stars crossing Northwest Passage on jet skis forced to cancel Arctic trek after costly rescue' (*The National Post*, 13 September 2013) <<https://nationalpost.com/news/canada/crew-filming-reality-tv-show-forced-to-cancel-trek-through-northwest-passage-on-jet-skis-after-costly-rescue>> accessed 14 February 2019.

⁵⁷ Canadian Coast Guard, 'Arctic Coast Guard Forum, Member States: Canada' (*Arctic Coast Guard Forum*, 2017) <<https://arcticcoastguardforum.com-/member-country/canada>> accessed 14 November 2018.

⁵⁸ Canada's coastline is the world's longest, measuring 243,042 km (including mainland coast and the coasts of offshore islands).

⁵⁹ Peter Kikkert, 'Nunavut' (*The Canadian Encyclopedia*, last edited 11 July 2019) <<https://thecanadianencyclopedia.ca/en/article/nunavut>> accessed 15 July 2019.

⁶⁰ *ibid.*

⁶¹ Nunavut's large islands include: Baffin (the largest island in Canada and fifth largest in the world), Ellesmere, Devon, Axel Heiberg and Prince of Wales. Victoria and Melville islands, also among the largest 30 islands in the world, are split between Nunavut and the Northwest Territories. The Archipelago

populated region in Canada, Nunavut still maintains a population of 35,944 residents, approximately 85 percent of which are Inuit distributed in 25 communities across Nunavut.⁶² ⁶³ As mentioned earlier, Arctic communities are experiencing population declines, with residents migrating to larger localities for better opportunities. Nunavut is no exception, with smaller communities in the Arctic Archipelago of Canada experiencing an outflow of residents. While this continues to be the case, Nunavut does maintain the highest fertility rate in Canada (an average of 2.9 children per women) and the resulting increase in Nunavut's population has also earned the distinction of the youngest populace in Canada.⁶⁴ Many of the communities in Nunavut border the Arctic Ocean and are considered to be remote and isolated from large-scale amenities, accessible only by air and sea.⁶⁵

is divided into northern and southern halves by the Parry Channel, which runs from Lancaster Sound on the eastern fringe to M'Clure Strait.

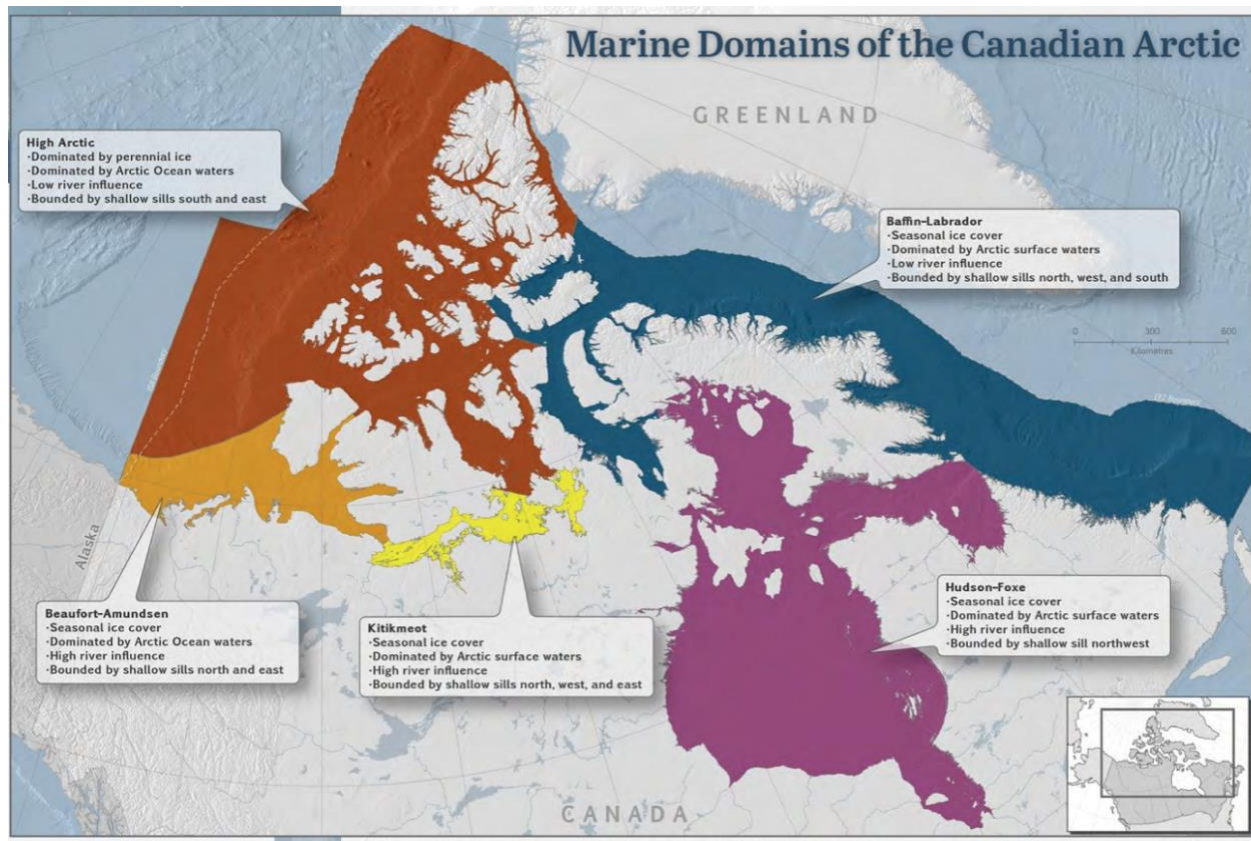
⁶² Statistics Canada, 'Census Profile, 2016 Census Nunavut and Canada' (Statistics Canada, last modified 21 Jun 2019) <<https://www12.statcan.gc.ca/-census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=PR&-Code1=62&Geo2=&Code2=&Data=Count&SearchText=Nunavut&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=62>> accessed 15 July 2019.

⁶³ The territory of Nunavut is dominated by National Parks and Reserves. Nunavut includes Auyuittuq National Park (19,089 km²), located near Pangnirtung on Baffin Island in the eastern Arctic; Quttinirpaaq National Park (37,775 km²), located on northern Ellesmere Island and formerly known as Ellesmere Island National Park Reserve; Sirmilik National Park (22,252 km²), located on the northern tip of Baffin Island near Pond Inlet; and Ukkusiksalik National Park (20,500 km²), located west of Repulse Bay. The NWT includes: Aulavik National Park (12,000 km²) located on Banks Island; Nááts'ihch'oh National Park Reserve (4,850 km²) adjoining Nahanni National Park Reserve to west; Nahanni National Park Reserve (30,050 km²), located in the southwest part of the Northwest Territories; Tukturnogait National Park (16,340 km²), located in the northeast corner of mainland Northwest Territories; Wood Buffalo National Park (44,807 km²), Canada's largest national park, straddling the NWT/Alberta border near Fort Smith, NWT; and the proposed Thaidene Nene National Park Reserve (30,000 km²), located at the east end of Great Slave Lake near Łutsel K'e. Yukon includes: Ivvavik National Park (10,168 km²), located in northern Yukon on the coast of the Beaufort Sea; Kluane National Park (22,013 km²), located in southwestern Yukon; and Vuntut National Park (4,345 km²), located in northern Yukon adjacent to Ivvavik National Park.

⁶⁴ Kikkert (n 59).

⁶⁵ *ibid.*

Figure 4. Canada's Maritime Domains and Environments



Canada's Arctic Sovereignty Issue

Canada's claim to sovereignty over its Arctic waters, although long-held (going back to at least 1969), is still the subject of controversy.⁶⁶ Canada's sovereignty claims over the *terra firma* in the Arctic Archipelago are uncontested. However, it also claims full sovereignty over the waters between the islands.⁶⁷ Canada considers all of the water of the Canadian Arctic Archipelago as historic internal waters, including the Northwest Passage.⁶⁸ In 1985, Canada drew strait baselines around its Arctic Archipelago, effectively declaring it all 'internal waters'. The United States did not find any issue with Canada's assertion *per se*. Rather, the United States argued that regardless of Canada's declaration of internal waters, those waters contain 'straits used for international navigation'. To this end, the status of the Northwest Passage was challenged by the United States. The United States protested by sending a ship through the Northwest Passage expressly to demonstrate their "freedom of navigation". The United States argued for its designation as an international strait whereas Canada argues that the Northwest Passage should be under Canadian sovereignty as part of their internal waters.⁶⁹ Following this disagreement, Canada proceeded to take the first step in shoring-up its claim to Arctic sovereignty by drawing straight baselines around its Arctic Archipelago in accordance with Articles 7 and 46 of UNCLOS.⁷⁰ While straight baselines would authorise complete Canadian sovereignty over the archipelago's waters, they do not necessarily

⁶⁶ The dispute goes back to at least 1969, when Exxon Mobil, a US flagged company, sent a supertanker through the Canadian Arctic. During those times, territorial seas only extended 3 nautical miles from baselines. Also preceding the creation of Exclusive Economic Zones, the supertanker and US Northwind that was accompanying it were able to pass through under high seas jurisdiction. During that passage, the vessels encountered difficulties which led them into Canada's 3 nautical mile territorial sea. Although Canada granted them permission after they had entered, this is generally acknowledged to mark the beginning of Canada's concern over their Arctic sovereignty.

⁶⁷ Mark Killas, 'The legality of Canada's claims to the waters of its Arctic archipelago' Ottawa L. Rev. 19 (1987) 95.

⁶⁸ Donat Pharand, 'Canada's Sovereignty Over the Northwest Passage' (1989) Michigan Journal of International Law Vol.10(2) 653-678, 655.

⁶⁹ *ibid* 653.

⁷⁰ *ibid*.

exclude the Northwest Passage from being designated as an international strait. As an international straight, other states would have transit passage rights irrespective of Canada's straight baselines.

Canada presents an alternative legal basis for its claims to full sovereignty over the Arctic Archipelago: land and waters undistinguished; historic title. This principle enables states to defend internal waters irrespective of geography if they can demonstrate state historical importance and use of the waters. Though not formally included in the Conventions, the legal requirements for the existence of historic waters are generally considered to be threefold: the exclusive exercise of State authority, long usage or the passage of time, and the acquiescence of foreign states.⁷¹ As Donat Pharand also remarks "there is the matter of burden of proof."⁷² Canada has recently made efforts to give evidence of its historic title to the Northwest Passage by mapping traditional Inuit trails throughout the area.⁷³ These historical trails predate the formations of the Law of the Sea treaties and have been employed by Canada (in addition to the trails of explorers, traders and trappers) to demonstrate its claim to this exception. Canada's Inuit did not distinguish between land and sea ice in the use of these trails. More important is that fact that no one else was using it historically, thus precluding it as a strait that has been "used for international navigation" in the past.⁷⁴ Although Canada may have drawn straight baselines arounds its Arctic Archipelago in 1985, it is upon the historic title that Canada basis its claim, pursuing the only exception that would ensure sole Canadian control of the Passage. This claim importantly safeguards Canada's claim over the Northwest Passage regardless of whether Canada's use of straight baselines is accepted or not. The disagreement between the United States and Canada on this matter has continued for a considerable time.

The United States have long argued for the designation of the Northwest Passage through Canada's Arctic Archipelago as a strait used for international navigation in line with Part II of UNCLOS. Ships navigating designated international straits under UNCLOS article 38 would then enjoy

⁷¹ *ibid.*

⁷² Pharand (n 68) 655.

⁷³ Killas (n 67) 98.

⁷⁴ United Nations Convention on the Law of the Sea (10 December 1982, EIF 16 November 1994) 1833 UNTS 397 Art 37 (UNCLOS).

the right of transit passage, despite transecting Canada's internal waters.⁷⁵ It is within international straits that all countries have the guaranteed right to sail.⁷⁶ Canada rejects the United States' position that that passages constitute international straits, denying that they have ever been used for 'international navigation' as of right (i.e., openly and without the express consent of Canada). The US argues, however, that the potential of a strait for international navigation is sufficient for it to be deemed an international strait. The United States has continuously reiterated and vocalised its objection to Canada's claim of historic title in an effort to avoid acquiescing.⁷⁷

There are two provisions within UNCLOS that allow for the employing of straight baselines from which the breadth of the territorial sea, the contiguous zone, the exclusive economic zone, and the continental shelf are to be measured.⁷⁸ First is under article 7: if the coastline is "deeply indented and cut into, or if there is a fringe of islands along the coast."⁷⁹ The second is under article 46 of UNCLOS: archipelagic states may draw straight archipelagic baselines to join the outermost islands and points of the archipelago, effectively encompassing the water within as internal waters.⁸⁰ Canada does not qualify as an archipelagic state, thus article 46 is not applicable in this case. Additionally, neither of these exceptions preclude the possibility of its containing international straits.

The use of straight baselines and the historic title claim by Canada are two separate legal arguments, each with its own controversies. Canada currently operates the Northwest Passage as an internal waterway, yet the legitimacy of Canada's Arctic sovereignty and status of the Northwest Passage go essentially unanswered.

Taking note of the sovereignty issue of Canada's Arctic region, it is important to bear in mind the ways in which these debates have or may influence search and rescue policy and operations in Canada's North. In 2008, in light of Russia's planting of a titanium flag under the North Pole, the

⁷⁵ UNCLOS (n 74) Art 38.

⁷⁶ *ibid.*

⁷⁷ Rachael Johnstone, *Offshore oil and gas development in the Arctic under international law: risk and responsibility* (Martinus Nijhoff Publishers 2014) 212.

⁷⁸ UNCLOS (n 74) Art 7, 46.

⁷⁹ UNCLOS (n 74) Art 7.

⁸⁰ UNCLOS (n 74) Art 46.

Harper Government launched a hearty, comprehensive initiative to reiterate Canada's sovereignty over the Canadian Arctic Archipelago.⁸¹ Large investments into economic, military and infrastructure build-up, while politically driven, yielded certain ripple effects into other parts of Canada's Northern programs. The Northern Strategy saw a large expansion in the Canadian Coast Guard's budget and infrastructure, which had a significant impact on aspects such as the number of Coast Guard primary response units available in the Arctic. As a federal program and service, Arctic search and rescue will always have the possibility to be influenced by national policy and interests to some degree. Without going into exhaustive detail, the author encourages consideration of this throughout the remainder of this study.

Nunavut's SAR Challenges

Nunavut's communities have achieved progress in health, education and employment. However, challenges continue to severely reduce their standard of living. The Canadian Encyclopaedia lists these challenges as: the high price of food and other commodities, overcrowded housing and housing shortages, high construction costs, a shortage of healthcare providers in the smaller communities, inadequate internet access, slow economic growth, and most relevant to this thesis, problems delivering and accessing essential services.⁸² Search and rescue services are included in the latter. Nunavut's large scale, remoteness and lack of infrastructure makes it difficult to effectuate proper SAR services in Canada's North. Except for the major centres such as Inuvik and Iqaluit, most communities have only basic infrastructure and equipment for conducting local emergency measures. "While adequate to handle many small-scale local situations, most communities do not have the infrastructure, equipment or human capacity to manage or support large-scale or highly technical situations (e.g. major marine rescues, aviation accidents, hazardous materials containment, etc.)"⁸³

⁸¹ Taber (n 42).

⁸² Kikkert (n 59).

⁸³ Funston (n 1) 19.

A community capacity report regarding the emergency preparedness of Nunavut's communities determined that small localities were not equipped to deal with large-scale aviation and marine disasters in their areas. This was especially the case when the disaster is followed by a large volume of people to support, causing a so-called "inundation event" in which rescued people would overwhelm the limited resources of the community.⁸⁴

Deficiencies in search and rescue capacities are exasperated by the high probability of incidents in Nunavut's waters due to the extreme difficulties of navigating in Canada's Arctic Archipelago. Marine bathymetry reveals the shallow nature of Nunavut's Arctic waterways (Figure 5). A constant issue for maritime operations, Canada's shoal ridden and unpredictable underwater profiles is unique to this region of the Arctic. This problem is made worse by the varying extensiveness and quality of navigational charts in addition to limited soundings. Indeed, this has been an issue for ships navigating in the past.⁸⁵ In 2010, the expedition cruise vessel *m/v Clipper Adventurer* carrying 128 passengers and 57 crew grounded on a rock shoal near Kugluktuk in the Canadian Arctic. The *Clipper Adventurer* and its owners claimed that Canada failed to inform mariners about the shelf and subsequently sued the federal government for what they claimed was "improper charting".⁸⁶ Despite the case being dismissed in federal court, Canada still struggles to maintain a comprehensive and up to date collection of navigational information and charting of its Arctic regions.⁸⁷ The *Clipper Adventurer* was not the first cruise ship to run aground in the shallow waters of Nunavut. In 1996, the expedition cruise ship *Hanseatic* went aground on a

⁸⁴ Funston (n 1) 21.

⁸⁵ Ikonon (n 17) 40.

⁸⁶ Garret Hinchey, 'Arctic cruise ship owners ordered to pay \$469K in costs for 2010 grounding' (*CBC News*, 9 February 2017) <<https://www.cbc.ca/news-canada/north/cruise-ship-clipper-adventurer-nunavut-judgement-1.3973937>> accessed 14 April 2019.

The federal court dismissed the \$13.5-million claim in a decision by Justice Sean Harrington which determined the fault to lie with the *Clipper Adventurer* for not seeking out the information regarding the rock shoal. Information about the shelf was provided through notice to shipping from the Canadian Coast Guard, however this was not onboard the ship at the time. The owners of the *Clipper Adventurer* were ordered to pay \$500 000 CAD in environmental damages.

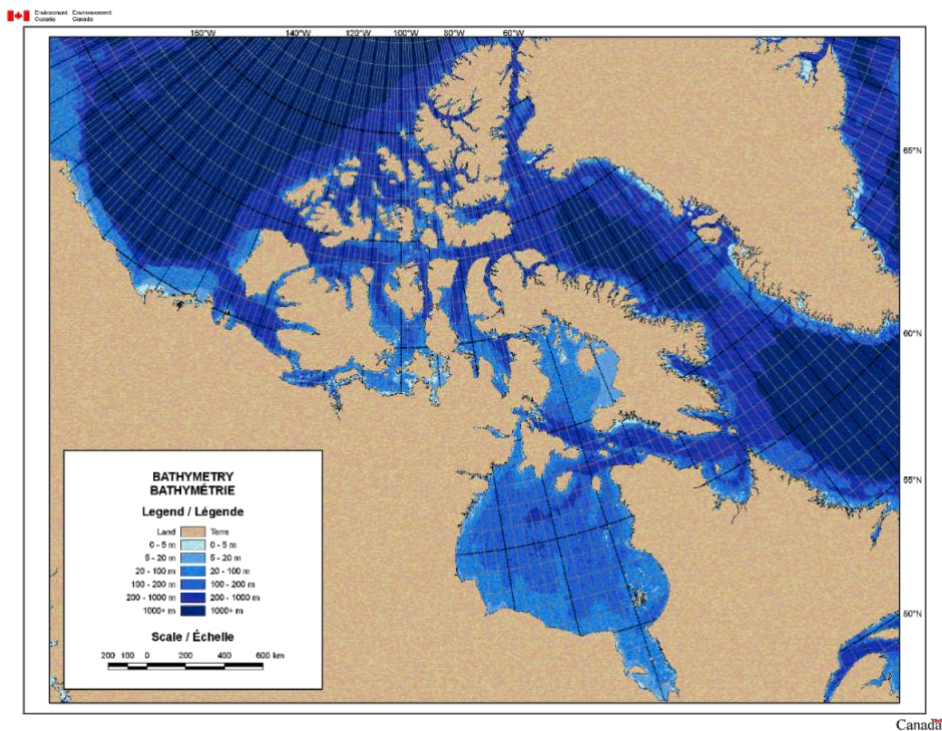
⁸⁷ Max Paris, "Arctic mapping problems 'disappointing' say opposition MPs" (*CBC News*, 7 October 2014) <<https://www.cbc.ca/news/politics/arctic-mapping-problems-disappointing-say-opposition-mps-1.2788956>> accessed 18 April 2019

sand bar in the Simpson Strait near Gjoa Haven Nunavut.⁸⁸ A current and ongoing issue in Canada's North, as recently as August 2018, the *Akademik Ioffe* ran aground in the western part of the Gulf of Boothia.⁸⁹

⁸⁸ Bruce Calderbank, 'Why Did the Clipper Clip It?' (2018) Hydrographic Survey Consultants Intl. <https://www.eiseverywhere.com/file_uploads/-4e88daabc488f1fba34af33500658e68_CHC2018-WhyDidtheClipperClipIt-Paper.pdf> accessed 13 April 2019.

⁸⁹ Jamie Malbeuf and Christina Romualdo, 'Passenger ship runs aground near Kugaaruk, Nunavut' (*CBC News*, 24 August 2018). <<https://www.cbc.ca/news/canada/north/kugaaruk-passenger-ship-1.4798750>> accessed 20 January 2019.

Figure 5. Canada's Arctic Bathymetry ⁹⁰



A Bathymetric Chart of Canada's Arctic depicting the generally shallow nature of the Archipelago, with certain passages between islands extending as little as 5-20 meters in depth

Cruise ships are not the sole types of vessels to run aground in navigation-related incidents in Nunavut. In 2010, the Merchant Vessel *Nanny* ran aground on a sandbar near Gjoa Haven in the Simpson Strait.⁹¹ Vessels of different types and operators have felt the challenges of navigating in

⁹⁰ Canadian Ice Services, 'Arctic Waters Depth Map' <<https://www.canada.ca/en/environment-climate-change/services/ice-forecasts-observations/latest-conditions/climatology/arctic-water-depth-map.html>>.

⁹¹ CBC News, '2nd tanker going to Northwest Passage' (*CBC News*, 7 September 2010) <<https://www.cbc.ca/news/canada/north/2nd-tanker-going-to-northwest-passage-1.949242>> accessed 2 April 2019.

Nunavut's waters equally. In the 2018 summer season, 15 Arctic based emergencies requiring the deployment of SAR assets occurred alone.⁹²

Nunavut's marine activity has been mainly restricted to community resupplying, local subsistence harvesting, small-scale commercial fishing and adventure/expedition tourism.⁹³ In spite of many successful transits of the Northwest Passage, it is unlikely that Nunavut will experience any significant build-up of transit shipping in the future. This is predominantly attributed to its seasonality, ice conditions, complex archipelago, chokepoint, restrictions, lack of adequate charts, sovereignty issues and operational costs. Rather, Nunavut's vessel traffic is expected to arise from community re-supply, fisheries, tourism, and research and government services as the ice conditions continue to diminish. As vessel traffic in Nunavut increases, the aforementioned issues are likely to have compounding effects, even if addressed. The fact remains that the Canadian Arctic experiences disproportionate challenges which directly undermine Arctic search and rescue efforts and prevention.

⁹² Canadian Coast Guard, "Canadian Coast Guard Arctic Operations Nearing Mid-season 'News Release'" (2017) Government of Canada
<<https://www.canada.ca/en/canadian-coast-guard/news/2018/08/canadian-coast-guard-2018-arctic-operations-nearing-mid-season.html>> accessed 2 March 2019.

⁹³ Ikonon (n 17) 71.

3 The Legal Basis for Search and Rescue

3.1 International Conventions

The duty to rescue the shipwrecked at sea is a historically respected principle that has been around since mariners first took to the sea. Now referred to as the duty to render assistance principle, it applies to all persons in distress without distinction. Nationality, legal status, or engagement in unlawful activity do not make a difference to their legal right to be saved.⁹⁴ Enshrined into three separate international conventions, the duty to render assistance is now considered a reflection of customary international law.⁹⁵ The duty to render assistance is therefore applicable to all states, independent of their being parties to the treaties.⁹⁶

The duty to render assistance has been codified into several international conventions that, in addition to this principle, form the legal basis for coastal states to provide lifesaving and search and rescue services.⁹⁷ The main international conventions detailing search and rescue obligations include: The United Nations Convention for the Law of the Sea (UNCLOS), 1982, the International Convention for the Safety of Life at Sea (SOLAS), 1974, and the International Convention on Maritime Search and Rescue (SAR Agreement), 1979. These international agreements stipulate the rights and duties of parties relating to search and rescue and the operational steps to be followed in SAR incidents.⁹⁸ The bulk of the legal obligations faced by

⁹⁴ Irini Papanicolopulu, 'The Duty to Rescue at Sea, in Peacetime and in War: A General Overview' (2016) *International Review of the Red Cross* Vol. 98(902) 491-514, 495.

⁹⁵ Rick Button, 'International Law and Search and Rescue' (2017) *Naval War College Review* Vol.70 24-53, 35.

⁹⁶ Papanicolopulu (n 94) 501.

⁹⁷ Button (n 95) 35.

⁹⁸ Sydnes et al (n 3) 114.

coastal states are captured and articulated by these three main conventions and form the legal basis for the lifesaving relationship between coastal state and shipmasters. In addition, they outline the legal requirements placed on both coastal states and shipmasters separately.⁹⁹ Including these three main international conventions, there are other international agreements that also include provisions relating to search and rescue, such as the International Convention on Salvage, 1989 which articulates the duty to render assistance article as well.¹⁰⁰ The various legal instruments for search and rescue articulate the international principles for SAR in which other regional/domestic search and rescue regimes and programs are nested.¹⁰¹ All coastal nations party to these international agreements experience the same SAR obligations. Some countries also encounter auxiliary obligations stemming from secondary regional treaties, often multi-lateral or bi-lateral in nature. The best example of such a regional agreement would be the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, 2011 (The Arctic SAR Agreement).

Substantive Obligations

Search and rescue regimes are comprised of two separate components. First, the substantive component (principles, norms, and laws) that direct the obligations and cooperation of the parties. Substantive obligations are the legal basis of search and rescue regimes. Second is the operational component (procedures and programs) that direct the practical and operative cooperation among parties. In order to address the effectiveness of Canada in meeting its Arctic SAR obligations, this thesis will first explore the substantive obligations that treaty parties are subject to as coastal states. After these basic substantive obligations are discussed, other regional agreements will be examined to determine the additional substantive obligations placed on Arctic nations. A list of Canada's primary SAR substantive obligations will subsequently be provided and discussed in Chapter 4.

⁹⁹ Button (n 95) 27.

¹⁰⁰ International Maritime Organization International Convention on Salvage (1989, EIF 14 July 1996) UNTS 1953 Arts 10(1-3) (International Convention on Salvage).

¹⁰¹ Sydnes et al (n 3) 114.

The core substantive obligations of search and rescue fall into two separate categories of one general principle: the duty to render assistance (also known as the duty to rescue). The duty to render assistance applies to both ships and coastal states and imposes the legal obligation onto both to rescue persons distressed at sea. The duty to render assistance serves as the foundation of search and rescue obligations for coastal states upon which all other search and rescue principles and activities expand upon.

The Duty to Render Assistance at Sea

The duty to render assistance is without doubt one of the best-established principles of international law of the sea.¹⁰² This principle is considered a reflection of customary international maritime law. As a result, states - both signatories and non-signatories alike - are equally subject to ensure that vessels and masters flying under their flags are legally required to render assistance when safe to do so.

The duty to render assistance applies to both shipmasters and coastal states, and is a twofold principle. It is (1) the obligation for shipmasters to rescue/assist people in distress at sea, and for the obligation of coastal states to legislate the duty to rescue into domestic law for all masters of ships flagged under their jurisdiction, and (2) the obligation for coastal states to provide adequate search and rescue services in their regions.

The duty to render assistance was first formally introduced into international law through the International Convention for the Safety of Life at Sea (SOLAS). The International Convention for the Safety of Life at Sea (SOLAS) is one of the most important international conventions pertaining to the safety of merchant ships and people at sea.¹⁰³ The first version adopted in 1914 following the *Titanic* disaster was meant to address the severe lack of safety procedures in marine transportation and standardise basic minimum safety requirements to avoid similar future disasters.¹⁰⁴ The current version known as SOLAS 1974 was ultimately adopted in 1980, and along with

¹⁰² Papanicopolulu (n 94) 492.

¹⁰³ International Maritime Organization, 'History of SOLAS (the International Convention for the Safety of Life at Sea)' (*International Maritime Organization*, 2019) <<http://www.imo.org/en/KnowledgeCentre/References-AndArchives/HistoryofSOLAS/Pages/default.aspx>> accessed 13 December 2018.

¹⁰⁴ *ibid.*

additional amendments, now functions as the primary contemporary legal instrument upon which safety at sea is based and enacted.

The first component of the duty to render assistance was initially articulated within SOLAS and can now be found under Regulation V/33 Distress Situations: Obligations and Procedures:

Regulation V/33 Distress Situations: Obligations and Procedures

1. The master of a ship at sea which is in a position to be able to provide assistance on receiving information from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service that the ship is doing so. This obligation to provide assistance applies regardless of the nationality or status of such persons or the circumstances in which they are found. If the ship receiving the distress alert is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, the master must enter in the log-book the reason for failing to proceed to the assistance of the persons in distress, taking into account the recommendation of the Organization, to inform the appropriate search and rescue service accordingly.

1.1 Contracting Governments shall co-ordinate and co-operate to ensure that masters of ships providing assistance by embarking persons in distress at sea are released from their obligations with minimum further deviation from the ships' intended voyage, provided that releasing the master of the ship from the obligations under the current regulation does not further endanger the safety of life at sea. The Contracting Government responsible for the search and rescue region in which such assistance is rendered shall exercise primary responsibility for ensuring such co-ordination and co-operation occurs, so that survivors assisted are disembarked from the assisting ship and delivered to a place of safety, taking into account the particular circumstances of the case and guidelines developed by the Organization. In these cases, the relevant Contracting Governments

shall arrange for such disembarkation to be effected as soon as reasonably practicable.¹⁰⁵

The secondary component of the duty to render assistance principle (the duty of coastal states to provide search and rescue services) is articulated in Regulation V/7 of UNCLOS 1974:

Regulation V/7 – Search and Rescue Services

1. Each Contracting Government undertakes to ensure that necessary arrangements are made for distress communication and co-ordination in their area of responsibility and for the rescue of persons in distress at sea around its coasts. These arrangements shall include the establishment, operation and maintenance of such search and rescue facilities as are deemed practicable and necessary, having regard to the density of the seagoing traffic and the navigational dangers and shall, so far as possible, provide adequate means of locating and rescuing such persons

Following SOLAS, the duty to render assistance principle was borrowed and implemented into Article 98 of the United Nations Convention for the Law of the Sea (UNCLOS):

98(1) Duty to Render Assistance

1. Every State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew or the passengers:

- (a) to render assistance to any person found at sea in danger of being lost;
- (b) to proceed with all possible speed to the rescue of persons in distress, if informed of their need of assistance, in so far as such action may reasonably be expected of him;

¹⁰⁵ International Convention for the Safety of Life At Sea (1 November 1974, EIF 25 May 1980) 1184 UNTS 3, V/33 (SOLAS).

(c) after a collision, to render assistance to the other ship, its crew and its passengers and, where possible, to inform the other ship of the name of his own ship, its port of registry and the nearest port at which it will call.

2. Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangement cooperate with neighbouring States for this purpose.¹⁰⁶

UNCLOS Article 98 renders the duty to render assistance obligation slightly more comprehensible and is thus commonly cited when referencing this concept. The author will also utilise UNCLOS Article 98 to further explain the concept below.

Addressing first Art. 98(1), the duty for shipmasters to rescue is a “high seas” article, however, it applies to all maritime zones.¹⁰⁷ The duty to render assistance applies to all vessels and ship masters. Military, state-owned vessels and private vessels are not distinguished between in UNCLOS Art.98, including warships.¹⁰⁸ Under the International Salvage Convention, warships may be excluded from complying with the duty to render assistance if involved in an engagement, however, peacetime has no such exception.¹⁰⁹ Generally, masters are only freed from their duty to render assistance in circumstances where the assisting vessel, crew, or passengers would be endangered as a result of rendering assistance.¹¹⁰

In addition to UNCLOS and SOLAS, other international agreements iterate the duty to render assistance principle. Chapter 2.1.10 of the International Convention on Maritime Search and Rescue requires treaty parties to ensure that assistance is provided to any persons in distress at sea, regardless of the nationality or status of such a person or the circumstances in

¹⁰⁶ UNCLOS (n 74) Art. 98(1).

¹⁰⁷ Papanicolopulu (n 94) 495.

¹⁰⁸ *ibid.*

¹⁰⁹ *ibid* 496.

¹¹⁰ International Convention on Salvage (n 100) Art 10(1).

which that person is found (Appendix A).¹¹¹ Finally, the duty to render assistance is further clarified in Article 10 of the International Convention on Salvage which addresses both the obligations of ship masters and states to effectuate the duty to render assistance (Appendix A).¹¹²

The ratification of international treaties creates international obligations for Canada. As a country utilising a dualist legal system, Canada simply cannot become party to a treaty in order to give the obligations the force of law domestically; the treaty provisions must be incorporated into Canada's domestic legislation.¹¹³ Therefore, it is Canada's constitution that makes the rule. This is opposite from monist states in which international law does not need to be transferred into national law, rather is automatically self-implementing. Coastal states have the responsibility to produce adequate legislation which upholds the duty to render assistance domestically. This is the component of the duty to render assistance principle which addresses compliance. Rather than situations in which shipmasters or vessels do not comply with their duty to render assistance giving rise to international responsibility of the state, it is rather the state that is responsible for ensuring that shipmasters are required to provide assistance.¹¹⁴ Shipmasters should face prosecution to the fullest extent of that state's domestic law in any failures to comply with the duty to rescue. If the responsibility to render assistance was not present in domestic law, however, it is that which would give rise to the responsibility of the state. *Separate delict* – the state being responsible for its own conduct – is the legal premise being referenced, and essentially boils down to what the state does or does not do. Since states must take all measures to ensure that shipmasters render assistance, the duty to render assistance can also be understood as an obligation of due diligence. This will be further explored in a later section.

Proper implementation of the international principle of the duty to render assistance into domestic law is central to its effectiveness. Shipmasters violating the duty to rescue has been occurring more frequently, especially

¹¹¹ International Convention on Maritime Search and Rescue, 1979 (27 April 1979, EIF 22 June 1985) UNTS 1405 Chapter 2.1.10 (1979 SAR Agreement)

¹¹² International Convention on Salvage (n 100) Art 10.

¹¹³ Elizabeth Eid, 'Interaction between international and domestic human rights law: A Canadian perspective' (2001) International Centre for Criminal Law Reform and Criminal Justice Policy, Vancouver, BC, Canada.

¹¹⁴ Papanicolopulu (n 94) 496.

with regards to contemporary issues such as the migrant crisis in the Mediterranean Sea. Particular strain has been put upon the duty to rescue by the number of sea migrants and refugees at sea. In certain cases, pressure from states is building that threaten to prosecute rescuers for rescuing, especially regarding the delivery of rescued people to ports of safety. Shipmasters carrying rescued migrants fear being turned away by inundated coastal states, in which they would be left in the lurch with passengers they are legally bound to deliver to safety.¹¹⁵ As a result, cases in which shipmasters have elected not to rescue migrants found at sea have emerged. This tends to affect regions with large volumes of migrants in distress at sea, and has become a topic of concern within international search and rescue. Generally, however, the duty to render assistance is rarely violated by shipmasters in the Arctic region. Attributable to the lack of migrants (and people for that matter), Arctic search and rescue rather experiences possible gaps in the fulfilment of legal requirements for coastal states to provide adequate SAR services in their region due to the difficulties associated with Arctic conditions. While the duty to render assistance applies to Canadian ship masters as codified into Canadian domestic law, it importantly applies to Canadian shipmasters in any maritime jurisdiction, not just Canada. The same goes for non-Canadian ships operating in Canada's jurisdictions. They are under flag state jurisdiction and thus obliged to render assistance as per their state's own domestic laws. In the Canadian Arctic, where potential rescue vessels are widely distributed and scarce, this becomes an important safeguard in ensuring any and all shipmasters are duty-bound to assist.

The second part of UNCLOS Article 98 also refers to the duty to render assistance principle, however refers rather to the coastal state's responsibility to provide search and rescue services in its region. Coastal states must develop the SAR processes and procedures and provide the ships, boats, aircrafts and specialized personnel that conduct lifesaving operations at sea.¹¹⁶

Article 98(2) also stipulates cooperation between neighbouring coastal states in the organising and effectuating of search and rescue in their regions. This cooperation can entail various activities, such as the sharing of SAR infrastructure or the execution of joint training exercises. However,

¹¹⁵ Papanicopolopulu (n 94) 498.

¹¹⁶ Button (n 95) 43.

collaborative efforts between coastal states most commonly manifest in the form of regional agreements. These regional agreements, such as the Agreement for Aeronautical and Maritime Search and Rescue in the Arctic for example, often detail the delineation of each SAR region and the collaborative efforts of the participating coastal states. However, UNCLOS Article 98(2) remains vague on what constitutes collaboration. In an effort to clarify the duty to coordinate with neighbouring states, the International Convention on Maritime Search and Rescue was established to systemize search and rescue on a global level.

The International Convention on Maritime Search and Rescue

Large-scale disasters at sea in the early twentieth century (many involving significant loss of life) made it apparent that alone the duty to render assistance was insufficient; an international SAR system for organizing, coordinating and conducting rescues at sea was needed.¹¹⁷ In 1979, the International Convention on Maritime Search and Rescue (SAR Convention) was created to satisfy this demand. The SAR Convention's purpose is three-fold. First, it requires parties to establish ship-reporting systems under which ships report their position to coastal radio stations. This serves as a monitoring system to keep tabs on what ships are operating where in the event of an emergency. Second, the SAR Convention makes certain the establishment of rescue co-ordination centres and subcentres to coordinate rescue operations within a coastal state's SAR region. Lastly, it provides the international framework for organizing and standardising SAR processes and procedures in the coordinating and conducting of lifesaving operations.^{118 119} This is arguably the most crucial purpose of the 1979 SAR Convention in which the cooperation between governments and those participating in SAR operations at sea is facilitated. Per the SAR Convention, States are requested to agree upon the SAR regions for which they are required to provide "adequate shore-based communication infrastructure, efficient distress alert

¹¹⁷ Button (n 95) 28.

¹¹⁸ Button (n 95) 42.

¹¹⁹ Sydnese et al (n 3) 114.

routing, and proper operational co-ordination to effectively support search and rescue services".¹²⁰

In accordance with the 1979 SAR Convention, the International Maritime Organization Maritime Safety Committee divided the world's oceans into 13 SAR areas inside each of which the countries concerned have delimited the SAR regions for which they are responsible. To assist governments, the International Maritime Organisation established an International SAR Plan and published, in conjunction with International Civil Aviation Organisation (ICAO), the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR).

IAMSAR

The International Aeronautical and Maritime Search and Rescue Manual is the series of technical instructions for carrying out and organising search and rescue around the world. Created to assist states in the development and harmonisation of their respective aeronautical and maritime SAR organisations, it also articulates the obligations they have accepted under the Convention on International Civil Aviation, the International Convention on Maritime Search and Rescue and the International Convention for the Safety of Life at Sea (SOLAS).¹²¹

A non-binding instrument, IAMSAR serves as a technical "how-to" manual for states, doing so in 3 separate volumes. IAMSAR manual Volume I addresses the organisation and management of the global SAR system, promoting the establishment and improvement of national and regional SAR systems and international cooperation.¹²² Volume II is centred around mission coordination and provides guidance and guidelines for those who plan and coordinate SAR operations and exercises.¹²³ Volume III is intended for carriage on board vessels and aircrafts, "to help with performance of a search, rescue, or on scene coordinator function and with aspects of SAR that pertain to their own emergencies."¹²⁴ For Arctic states, the IAMSAR manual

¹²⁰ Papanicolopulu (n 94) 499.

¹²¹ IAMSAR manual: International Aeronautical and Maritime Search and Rescue Manual (2007) London IMO Chapter V (IAMSAR).

¹²² Button (n 95) 29.

¹²³ *ibid.*

¹²⁴ IAMSAR (n 121).

also provides additional guidelines on the implementation the Arctic SAR agreement.¹²⁵

3.2 Regional Agreements

In many regions of the world, coastal states have long realised that effective SAR services cannot be provided independently.¹²⁶ Huge volumes of infrastructure and investment are necessary for high-functioning search and rescue programs. Many states have also recognised the cost-saving and efficiency results of neighbourly cooperation and resource sharing. Thus, coastal states often work frequently together to develop regional agreements. Cooperative agreements that articulate the parameters of these relationships increase SAR effectiveness and simultaneously fulfil the substantive duties of the coastal state found in Chapter 3.1.5 of the SAR Agreement and Article 98 (2) of UNCLOS which requires states to provide adequate search and rescue “by way of mutual regional arrangements and cooperate with neighbouring States for this purpose”.¹²⁷ Most of the cooperative agreements now in force pertain to particular regions. Generally, coastal states of these regions face similar challenges based on shared factors, say the environment or common industries. The agreements come in multiple legal forms, from non-binding Memorandums of Understanding (MOUs) to bilateral, trilateral, and even multilateral legally binding treaties. The regional agreement governing the Arctic region is the Agreement on the Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (Arctic SAR Agreement).

The Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic

¹²⁵ Sydnes et al (n 3) 115.

¹²⁶ Button (n 95) 31.

¹²⁷ UNCLOS (n 74) Art 98(2).

The increased difficulties of search and rescue operations in the Arctic have long been a continuous area of concern for Arctic countries. Resources for SAR operations in the Arctic are limited in terms of both capacity and current technology. In an effort to address these deficits, Arctic states took initiative through the auspices of the Arctic Council to pursue actionable solutions. At a ministerial meeting in Tromsø, the Arctic Council established a Task Force to develop an international instrument for SAR cooperation in the Arctic.¹²⁸ Several bi-lateral and multilateral agreements covering various parts of Arctic and its activities existed prior to these efforts. Building upon these pre-existing agreements, the Task Force concluded with the signing of a pan-Arctic specific search and rescue treaty; the Agreement on the Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic.¹²⁹ Signed by the eight Arctic states and entering into force in 2013, the Arctic SAR Agreement was concluded in accordance with the 1979 SAR Convention to satisfy the request for cooperative arrangements for regional search and rescue.¹³⁰

The Arctic SAR Agreement contains 20 Articles, one Annex and three Appendixes whose primary objective is to “strengthen aeronautical and maritime search and rescue cooperation and coordination in the Arctic.”¹³¹ The Arctic SAR agreement does not generate any new substantive obligations for coastal states. Rather, the articles of the agreement shore up pre-existing international law and substantive obligations and help facilitate inter-state cooperation.¹³² The Agreement can be thought of as the creation of a framework to improve capacity to meet substantive obligations, rather than creating new ones. Article 7(3b) of the Arctic SAR Agreement, for example, reiterates the duty to render assistance, where Article 8 instructs parties on the procedure for requesting entry into territories of another party for the purposes of search and rescue operations.¹³³ ¹³⁴ The essence of the regional

¹²⁸ Sydnes et al (n 3) 116.

¹²⁹ *ibid* 110.

¹³⁰ *ibid* 121.

¹³¹ Arctic Council 2011, ‘Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic’ Arctic Council Secretariat, Tromsø; Norway, Art 2 (Arctic SAR Agreement).

¹³² Sydnes et al (n 3) 126.

¹³³ Arctic SAR Agreement (n 131) Arts 7, 8.

agreement is stated in Article 9, which offers a comprehensive overview of possible collaborative efforts to achieve mutual SAR cooperation, including the:

- (a) exchange of experience;
- (b) sharing of real-time meteorological and oceanographic observations, analyses, forecasts, and warnings;
- (c) arranging exchanges of visits between search and rescue personnel;
- (d) carrying out joint search and rescue exercises and training;
- (e) using ship reporting systems for search and rescue purposes;
- (f) sharing information systems, search and rescue procedures, techniques, equipment, and facilities;
- (g) providing services in support of search and rescue operations;
- (h) sharing national positions on search and rescue issues of mutual interest within the scope of this Agreement;
- (i) supporting and implementing joint research and development initiatives aimed, *inter alia*, at reducing search time, improving rescue effectiveness, and minimizing risk to search and rescue personnel; and
- (j) conducting regular communications checks and exercises, including the use of alternative means of communications for handling communication overloads during major search and rescue operations.¹³⁵

The actual working of SAR itself is a national responsibility, however the Arctic SAR agreement creates an Arctic SAR regime as a whole emergency response system. Central to this regime is the ability of the parties to provide

¹³⁴ The Arctic SAR agreement specifies that SAR operations shall not prejudice the sovereignty of the coastal state(s). The parties must “request permission to enter the territory of a Party or Parties for search and rescue purposes.” Importantly, the party receiving a request for entry into its territory shall apply “the most expeditious border crossing procedure possible”.

¹³⁵ Arctic SAR Agreement (n 131) Art 9.

mutual assistance and to conduct joint operations.¹³⁶ In the interest of establishing this regime and streamlining communications, the Arctic SAR agreement outlines the competent authorities of the parties, agencies responsible for search and rescue, and rescue coordination's centres in the Appendixes.¹³⁷

The Arctic SAR agreement importantly divides up the areas and responsibilities for search and rescue of each party. Each member-state is responsible for a particular SAR area (this is in accordance with the 1979 SAR Convention) and the geographical scope of this is specified in the Arctic SAR Agreement Annex (Figure 6).¹³⁸ The agreement areas are not related to any boundaries between States, or their sovereignty, sovereign rights or jurisdiction.¹³⁹ Any neighbouring parties with adjacent SAR regions may amend information on the delineation of SAR regions relevant to the Agreement. They must, however, do so by way of mutual agreement.¹⁴⁰

There are a number of criticisms regarding the Arctic SAR agreement. The Arctic SAR agreement mandates that, within their areas, members are required to "promote the establishment, operation and maintenance of an adequate and effective SAR capability".¹⁴¹ However, this begs the question: "What constitutes adequate and effective"? Additionally, the Arctic SAR agreement does not specify the resources that parties are obligated to provide and stipulates only that the "implementation of this Agreement shall be subject to the availability of relevant resources".¹⁴² To what "relevant resources" is referring to is not articulated. This is an example of a variable standard, in which the obligations depend on capacity. Variable standards are an element of due diligence in which the thresholds to meet are somewhat flexible dependent the standards of international law. Due diligence standards may also vary depending on the norm in question or at stake.¹⁴³

Finally, the Arctic SAR regime is criticised for having no formal decision-making body and offers only direct negotiations as a means of

¹³⁶ Sydnes et al (n 3) 111.

¹³⁷ Arctic SAR Agreement (n 131).

¹³⁸ Arctic SAR Agreement (n 131).

¹³⁹ Sydnes et al (n 3).

¹⁴⁰ Arctic SAR Agreement (n 131) Art 15.

¹⁴¹ Arctic SAR Agreement (n 131) Art 3(3)

¹⁴² Sydnes et al (n 3) 117

¹⁴³ Duncan French and Tim Stephens, 'ILA Study Group on Due Diligence in International Law', First Report 7 March 2014, 5

settling disputes between parties that precluding final dispute settlements through a court or arbitration panel. Thus, there is no sanctioned means of enforcement.

Figure 6. Arctic Search and Rescue Regions ¹⁴⁴

The different regions of responsibility for Arctic search and rescue, as articulated in the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic

¹⁴⁴ The Arctic Institute, 'Arctic Maps' (*The Arctic Institute*, 17 May 2016) <<https://www.thearcticinstitute.org/arctic-maps/>> accessed Jun 12 2019.

3.3 The Global SAR system

The 1979 SAR Convention imposed considerable substantial obligations on contracting members. A revised Annex of the SAR convention was adopted in 1998 to help clarify the responsibilities of governments and once again emphasize regional approaches.¹⁴⁵ As a result of the foundation provided through the SAR convention, each country develops policies, procedures, practices and programs for search and rescue, thus creating a global and intertwined maritime SAR system.¹⁴⁶ The development of a global, full coverage SAR system with the allocation of SAR regions ensures that states are not required to provide SAR services for their own citizens wherever they travel.¹⁴⁷ Today, the global SAR system is still based on the original Convention, however, it has grown to feature a myriad of other layers pertaining to search and rescue, including operational guidelines, best practices, and other legally binding procedures. Many of these additional aspects originated through the umbrella of the International Maritime Organisation and the International Civil Aviation Organisation. The contemporary workings of the global SAR system are predominantly influenced by these two organisations.¹⁴⁸

The Annex to the SAR Convention requires the establishment of one Rescue Coordination Centre (RCC) and Rescue Sub-centre (RSC) for each maritime search and rescue region.¹⁴⁹ The coastal state's RCC and RSCs are the backbone of the global SAR system. They are responsible for the organisation of SAR services and the coordination of rescue services in the maritime region in the event of an emergency incident.¹⁵⁰ The Rescue

¹⁴⁵ International Maritime Organization, 'Our Work, Documents of Relevance to SAR' (2017) (*International Maritime Organization: About International SAR*) <www.imo.org/en/OurWork/Safety/RadioCommunicationsAndSearchAndRescue/SearchAndRescue/Pages/IMO-documents-relevant-toSAR.aspx> accessed 13 November 2018.

¹⁴⁶ Button (n 95) 26.

¹⁴⁷ *ibid* 30.

¹⁴⁸ *ibid* 31.

¹⁴⁹ *ibid* 30.

¹⁵⁰ *ibid*.

Coordination Centre should be located in an area where it can perform its function to the highest capabilities. They also require round the clock availability, highly trained staff and personnel, have the ability to receive distress alerts, and maintain plans of operation for different types of distress scenarios. Rescue Coordination Centres are the authority on the capabilities of the state's rescue infrastructure and agencies, and employ this expertise in the deployment of rescue services.¹⁵¹ RCCs have a huge volume of requirements and best practices they are required to fulfil to be considered effective to the fullest degree (Annex 2).

In certain situations, coastal states' SAR agencies may choose to establish Joint Rescue Coordination Centres (JRCC) within each search and rescue region (SRR). JRCCs serve the purpose of coordinating and controlling aeronautical and maritime SAR operations in each region. For countries such as Canada, where maritime and aeronautical SAR services are provided by different state agencies, JRCCs are critical for overseeing the overall provision of joint services between air and marine agencies during a rescue operation. Joint Rescue Coordination Centres will coordinate SAR units' response to rescue incidents in accordance with national and regional policy and directives.¹⁵² In Canada, where national, provincial and territorial governments maintain separate yet intertwined SAR programs, JRCCs remain functionally necessary (Appendix B).

Under the influence of the IMO and ICAO, the global SAR system defines the different personnel roles and responsibilities related to RCCs and JRCCs for efficient organisation and implementation of a coastal state's national SAR system. The roles include:

- (1) SAR coordinator (SC) - person/agency responsible for management and oversight of a coastal state's SAR organization
- (2) SAR mission coordinator (SMC) - Official temporarily assigned to coordinate, direct, and supervise a SAR Operation
- (3) On scene coordinator (OSC) - may be assigned by the SMC to coordinate SAR operations on scene when multiple resources are working together within specified area.

¹⁵¹ *ibid.*

¹⁵² CAMSAR (n 5) Sec. 2.05(E) p.1 of 8.

(4) Aircraft coordinator (ACO) can also be assigned by the SCM or OSC in a SAR operation of the response involves multiple aircraft. ACO is responsible for flight safety and effective use of the aircraft in the conduct of the operation¹⁵³

3.4 Arctic SAR actors

While national governments form the nucleus of the Arctic SAR regime, there are other actors that are involved in Arctic search and rescue. Some of these actors provide operational support and expertise, others provide a platform for nations and operators to come together and facilitate the creation of guidelines, standard operating procedures and legal instruments. Together, they contribute wide-ranging value to the Arctic SAR regime as a whole. This is especially significant when acknowledging the Arctic's unique challenges and how the collaborative movement towards overcoming them is key.

Within Arctic SAR, there are numerous actors who feature in the multiple different aspects of search and rescue, from operations and rescues, to law and policy makers, influencers and stakeholders. Each actor plays an important role in the overall development of Arctic SAR, not to mention the general maintenance of SAR regimes. In helping organise and direct matters, the Arctic SAR Agreement consists of agreed upon principles, norms, rules, procedures and programs that govern the interaction of actors in a specific issue area.¹⁵⁴

National SAR Actors (Competent Authorities, Agencies and Rescue Coordination Centres)

The global SAR system applies to all areas of the world, including the Arctic. Under this structure, the eight Arctic nations make up the backbone of Arctic search and rescue. Each coastal state organises its maritime SAR authorities

¹⁵³ Button (n 95) 29.

¹⁵⁴ Sydnes et al (n 3) 111.

and organisation on the basis of its available SAR resources, unique geographical challenges, political considerations, cultural influences, available funding and domestic SAR legal framework.¹⁵⁵ To achieve this, national search and rescue programs are spearheaded by a competent authority that sanctions the various search and rescue agencies of that country. The Arctic SAR Agreement lists the competent authorities for each nation and its corresponding agencies. Also listed in the Appendixes are the Rescue Coordination Centres for the member states (Appendix C). To further clarify, the appendixes set out the three national layers of the decision-making hierarchy pertaining to Arctic SAR. As per the Agreement Appendixes, “competent authorities” represent the political level, “agencies” are government units with a specific functional and/or territorial competence, and “rescue coordination centres” are the units which have overall operational responsibility during Arctic SAR operations.¹⁵⁶ For example, the United States Coast Guard is named as the competent authority for the United States, the Coast Guard and the Department of Defence are named as agencies and the American rescue coordination centres listed in Appendix III are the Joint Rescue Coordination Centre Juneau (JRCC Juneau) and the Aviation Rescue Coordination Centre Elmendorf (ARCC Elmendorf).

Together, the competent authorities, agencies, and rescue coordination centres make-up the domestic search and rescue program, and are those involved in actual search and rescue situations. Additionally, these three components generate the so-called “documentation” for the SAR policies and practices of that nation. This is done through the creation of guidelines, best-practices, manuals, policy papers, and legislation. The set-up of each national program is unique and countries will organise their programs as they determined best. Sometimes, nations might place search and rescue programs under the jurisdiction of multiple (or sometimes seemingly unrelated) agencies. Canada and the United States both allocate their SAR programs to the military and coast guard, whereas Denmark has it placed under the Danish Maritime Authority, the Danish Transport Authority, and (in the case of the Faroe Islands) the Ministry of Fisheries. The main point to take away from the differences between national search and rescue programs is the

¹⁵⁵ Button (n 95) 26.

¹⁵⁶ Sydnese et al (n 3) 116.

relative freedom afforded to countries regarding the structure of their SAR programs. Indeed, the SAR Convention and the Arctic SAR Agreement require basic requirements for each party member, however, there is a significant degree of variation in the ways in which countries go about meeting these specifications.

There are advantages to this flexibility. States are able to take measures that best coincide with their legal systems, geography and budget. Fixed or prescriptive regulations can be constricting, and quickly become out of date. Outcome-based regulations gives way to a flexibility which has its merits, especially concerning the unique challenges of Arctic SAR. Of course, this flexibility makes it difficult to measure if a state is really meeting its requirements. It is in examining the ways in which countries configure their SAR programs that the extent of their efforts may be determined.

The Arctic Council (PAME, EPPR, SAR Expert Group)

The Arctic Council, although containing Arctic nations as members, serves as an intergovernmental forum that functions as a place for dialogue in Arctic governance politics between Arctic states and indigenous peoples.¹⁵⁷ A platform for coordination and co-operation between the Arctic states on a range of matters, the Arctic Council comprises of the eight Arctic states (Canada, Kingdom of Denmark, Finland, Iceland, Norway, Russian Federation, Sweden, United States), six permanent participants who represent the various indigenous groups across the Arctic, and observers, who may be non-Arctic states, inter-governmental organisations and fora, and non-governmental organisations (NGOs).¹⁵⁸ ¹⁵⁹ The Arctic Council has six working groups which cover a broad field of subjects, from climate change to emergency response, yet excluding security; Arctic Contaminants Action

¹⁵⁷ Emmerson and Lahn (n 51).

¹⁵⁸ Arctic Council, 'About Us' (*Arctic Council*, date) <<https://arctic-council.org/index.php/en/about-us/member-states>> accessed 29 April 2019.

¹⁵⁹ The six Permanent Participants of the Arctic Council are Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council.

Program (ACAP), Arctic Monitoring and Assessment Programme (AMAP), Conservation of Arctic Flora and Fauna (CAFF), Protection of the Arctic Marine Environment (PAME), Sustainable Development Working Groups and Emergency Prevention, Preparedness and Response working group (EPPR). EPPR is the working group most closely involved in Arctic search and rescue.

The six indigenous permanent participants include Aleut International Association, Arctic Athabaskan Council, Gwich'in International Council, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council. Indigenous people are closely involved in Arctic SAR matters. Often first on scene and participating in rescue operations, indigenous people (with their traditional knowledge, environmental savviness and general local expertise) are invaluable to the operation of search and rescue and the prevention of emergency disasters. Certain countries (such as Canada), have recognised the value added by indigenous people, and have systematically involved them within their SAR program. Seeing as how the impacts of Arctic emergencies can fall directly to indigenous communities, the inclusion of indigenous peoples within Arctic search and rescue development and prevention is essential.

Emergency Prevention, Preparedness and Response Working Group

The EPPR working group's official mandate is to "contribute to the prevention, preparedness and response to environmental and other emergencies, accidents and search and rescue."¹⁶⁰ What this may encompass is rather broad and can be interpreted in several ways. The EPPR is not an operational response organisation (this is left up to member states), nor does it have any formal authority to instruct on SAR operations or practices. In this regard, the EPPR has very little sanctioned power. That is not to say it doesn't have significant influence. The EPPR operates as a third party within the space between national governments to share information, collect data, address gaps and prepare strategies relating to Arctic search and rescue. The EPPR brokers cooperation among the many Arctic actors to streamline collaboration on various SAR projects pertaining to: development of

¹⁶⁰ Arctic Council, 'About Us' (*Arctic Council*, date) <<https://arctic-council.org/index.php/en/about-us/member-states>> accessed 29 April 2019.

guidance and risk assessment methodologies, coordination of response exercises and training, and the exchange of information on best practices with regards to the prevention, preparedness and response to accidents and threats.¹⁶¹ Since 2015, search and rescue issues have been part of the EPPR's mandate. The EPPR supports the Arctic SAR agreement by collecting data in establishing national level procedures.¹⁶² This includes the planning, execution and reporting of SAR activities with follow-up on the Arctic SAR agreement and addressing relevant findings from SAR exercises.¹⁶³

The SAR Expert Group

In 2015, the EPPR Search and Rescue Expert Group was established to follow up on the implementation of Articles 9 (Cooperation Among the Parties) and 10 (Meetings of the Parties) of the Arctic SAR Agreement.¹⁶⁴ The SAR Expert Group facilitates support for those that deal with SAR issues, with the specific aim to “identify key lessons of Arctic incidents and exercises and communicate/disseminate effective practices and necessary mitigation or remedial actions to the ministerial level, member states and other relevant international bodies”.¹⁶⁵ As their title suggest, they are the “experts” on Arctic SAR, and maintain databases for knowledge and lessons learned, establishing a cross-border SAR asset database and other supporting projects.¹⁶⁶

The Arctic Coast Guard Forum

While the EPPR SAR Expert Group works to provide expert advice and expertise regarding Arctic search and rescue, it does not thoroughly address

¹⁶¹ Arctic Council, ‘Working Groups’ (*Arctic Council*, date) <<https://arctic-council.org/index.php/en/about-us/working-groups/eppr>> accessed November 13 2018.

¹⁶² Sydnes et al (n 3) 119.

¹⁶³ Emergency Prevention Preparedness and Response (EPPR), ‘Updated EPPR Strategic Plan of Action for Approval’ (2013).

¹⁶⁴ Sydnes et al (n 3) 119.

¹⁶⁵ *ibid*.

¹⁶⁶ Emergency Prevention Preparedness and Response (EPPR), ‘Search and Rescue (SAR) Expert Group Mandate’ (2017).

the cooperation between the agencies of the member states; most notably the various national Coast Guards. Resources and infrastructure in the Arctic are scarce. Pooling resources can lead to increased situational awareness and increased safety. Recognizing the inherent benefits of cooperation amongst national Coast Guards, the 8 Arctic nations signed a joint statement establishing the Arctic Coast Guard Forum (ACGF) in 2015. The ACGF was created as "an operationally focused, consensus-based organization that leverages collective resources to foster safe, secure and environmentally responsible maritime activity in the Arctic."¹⁶⁷ The member-states of the ACGF have worked together to develop 10 strategic goals to guide the work of the forum. The 10 strategic goals, which focus on practical Coast Guard collaboration, also overlap with the aims of the Arctic Council SAR Expert Group in trying to better Arctic SAR across all levels:

1. Strengthen multilateral cooperation and coordination within the Arctic maritime domain, and existing and future multilateral agreements
2. Seek common solutions to maritime issues related to the agencies fulfilling the functions of coast guards within the region
3. Collaborate with the Arctic Council through the sharing of information
4. Facilitate safe and secure maritime activity in the Arctic region, with sustainable development to be promoted as appropriate
5. Contribute to a stable, predictable, and transparent maritime environment
6. Build a common operational picture to ensure proper protocols for emergency response coordination, and safe navigation
7. Work collaboratively to advance the protection of the marine environment
8. Maximize the potential for Arctic maritime activities to positively impact the communities, lives, and culture of Arctic communities including indigenous peoples
9. Integrate scientific research in support of Coast Guard operations as appropriate

¹⁶⁷ Sydnese et al (n 3) 119.

10. Support high standards of operations and sustainable activities in the Arctic through the sharing of information, including best practices and technological solutions to address threats and risks ¹⁶⁸

Non-Governmental Organisations

Non-Governmental Organisations (NGOs), while not directly involved in Arctic search and rescue, still remain involved in the greater discussions and topics of Arctic SAR, often in an advisory capacity where they provide information and expertise. The University of the Arctic and International Arctic Science Committee, for example, are NGOs with observer status within the Arctic Council. Both of these NGOs provide scientific information and institutional knowledge regarding Arctic matters, which can inform and impact Arctic search and rescue operations and policies. The World-Wide Fund for Nature (WWF) is representative of other NGOs who maintain specific agendas and targets. Their conservation mandate and interest in disaster prevention, for instance, drives their involvement in Arctic matters. Although they are primarily concerned with environmental aspect of Arctic search and rescue, their input may have impacts on Arctic SAR developments that overlap with the “loss of life aspect”. There are thirteen non-governmental organisations with observer status in the Arctic Council, and as observers they have no decision-making power. However, NGOs may make relevant contributions during Arctic Council meetings.

In addition to the thirteen NGOs with observer status at the Arctic Council, there are a myriad of other NGOs active in the Arctic which cover all manner of interests such as environmental protection, social justice and welfare, indigenous rights, human rights. Indeed, NGOs hold little decision-making power, especially in institutions such as the Arctic Council. However, the real strength of NGOs is their ability to affect change through lobbying efforts and public involvement. NGOs often lobby governments and other stakeholders that have in the past led to real change. In 2016 for example, after three years of lobbying and public campaigns, Greenpeace

¹⁶⁸ The Arctic Coast Guard Forum, ‘About the ACGF’ (*The Arctic Coast Guard Forum*) <<https://www.arcticcoastguardforum.com/about-acgf>> accessed 8 January 2019.

Canada along with indigenous objectors (Clyde River Hamlet), managed to achieve a legal stop on seismic blasting in the Canadian Arctic.¹⁶⁹ Although some NGOs may be seen as radical, NGOs in general can sometimes manage to achieve significant impact on the various actors of the Arctic, even including powerful nation states.

Recognising the reach of their influence, NGOs have also teamed-up with other NGOs and actors to maximize their clout and seek solutions to common problems.¹⁷⁰ In 2011, the Arctic NGO Forum was created for NGOs involved in Arctic matters to come together, exchange ideas and perspectives. This platform allows NGOs “the possibility to strengthen their positions and gain access to policy makers”.¹⁷¹

Arctic SAR Stakeholders

Arctic SAR stakeholders (who usually have a vested interest in Arctic search and rescue for business reasons) are also influential actors when it comes to developing Arctic SAR. Arctic oil and gas industry stakeholders who are operating in the Arctic often require comprehensive Arctic disaster prevention and response plans simply to be granted licensing.¹⁷² These plans serve to safeguard investments and infrastructure, and are also utilised by stakeholders to combat criticisms or concerns of Arctic extraction activities from governments and the general public. Many of the stakeholders in the oil and gas industry oblige the “standard” SAR requirements when carrying-out extraction activities, such as having adequate Arctic emergency response plans.¹⁷³ Some companies, however, voluntarily strengthen their emergency prevention and response efforts past the common benchmarks. The

¹⁶⁹ Greenpeace Canada, ‘Our Story’ (*Greenpeace Organization*, Last Updated 2019) <<https://www.greenpeace.org/canada/en/about-us/history-successes/>> accessed 8 September 2018.

¹⁷⁰ Martina Tyrrell, ‘Environmental NGOs Team Up with Inuit’ (*Arctic Deeply*, 20 May 2016) <<https://www.newsdeeply.com/arctic/community-/2016/05/20/environmental-ngos-team-up-with-inuit>> accessed 12 October 2018.

¹⁷¹ Arctic NGO Forum, ‘What is the Arctic NGO Forum?’ (*Arctic NGO Forum*, 2014) <<http://arcticngoforum.org>> accessed 8 December 2018.

¹⁷² Equinor, ‘Environment plan Appendix 9-1 Oil pollution emergency plan’ *Stromlo-1 exploration drilling program* (2019).

¹⁷³ *ibid.*

Norwegian oil and gas mogul Equinor, for example, has taken additional measures to upgrade its emergency preparedness during its new Barents Sea extraction operation. Recognizing the dangers of far offshore oil exploration (and perhaps trying to quell public concerns), Equinor has implemented the use of standby vessels with towing capacities, supply vessels, man overboard rescue boats, a SAR camera and SAR helicopter and helipad on its project's oil rig.¹⁷⁴ Indeed, these additional safety efforts may also be utilised by Equinor to marketing effect, however, this is unrelated to the end result of greater Arctic industry SAR build-up.

The other industry stakeholders heavily involved in Arctic SAR are shipping companies and groups. The Arctic is experiencing critical ice loss, and although this leads to longer shipping seasons and the possibilities of new shipping routes, shipping and cruise companies still experience significant safety issues when navigating northern waters. Shipping companies have substantial laws and requirements imposed upon them regarding safety, however there are also Arctic-specific agreements (such as the IMO's International Code for Ships Operating in Polar Waters) which stipulate certain SAR requirements for all vessels in the Arctic and Antarctic. Shipping companies have long recognised the perils and dangers of Arctic shipping and, as a result, have developed a culture of sharing information and best practices amongst one another. The industry has also produced various groups and forums to facilitate the cooperation between the various stakeholders of Arctic shipping, such as the Arctic Shipping Forum North America, which often address Arctic shipping topics.

Environmental issues tend to dominate both the oil and gas and the Arctic shipping industry's efforts; however, search and rescue topics are also regarded. As a result of stakeholder initiative and input, much of Arctic search and rescue has been refined and improved.

As those most heavily involved with maritime operations, these two industries remain the most impactful stakeholders on Arctic SAR. Other Arctic search and rescue stakeholders exist although some operate more on land than at sea. Regardless, they may still occasionally overlap with marine environments, such as Arctic infrastructure industries, the Arctic tourism

¹⁷⁴ Equinor, 'Safely exploring the Barents Sea' (*Equinor 'What we do'*) <<https://www.equinor.com/en/what-we-do/responsible-drilling-in-the-barents-sea.html>> accessed 11 October 2018.

industry, Arctic fisheries and the Arctic transportation industry. These stakeholders also have a place at the table when it comes to Arctic search and rescue development, albeit to varying degrees.

3.5 The Arctic SAR Regime

Having explored the substantive obligations of Arctic search and rescue, the various actors involved and the difficulties of Arctic SAR, we may now better understand how these parts fit together to create an overall Arctic SAR regime. The “Arctic SAR Regime” is the cooperative program that SAR Agreements and efforts jointly create in the Arctic. The basic function of the Arctic SAR regime requires that nations adequately perform their own search and rescue duties in their areas of responsibility. Upon this is built other collaborative efforts. Party members to the Arctic SAR agreement have taken steps to make the regime operational, participating in information and resource sharing, not to mention collaborative politics and operations. Arctic nations solidify their operational collaboration predominantly through the conducting of joint exercises. Exercises seem to be the centrepiece of practical cooperation. Exercises are used to “test” SAR agreement implementation and to gauge its effectiveness as a regime.

Operative collaboration between the parties has long been developing through a series of joint exercises, which often uncover areas of deficiencies and challenges of the regime to be addressed collectively. Following the Arctic Zephyr table top exercise in 2015 for example, it was discovered that the Arctic SAR agreement does not provide an effective mechanism for fulfilling Article 9 on Cooperation among Parties.¹⁷⁵ Made apparent by the Arctic Zephyr exercise, A.K Sydnes (*et al*) noted in their article “International Cooperation on Search and Rescue in the Arctic” that codified methods for the coordination of operational SAR activities were lacking, as were standardised processes for sharing lessons learned.¹⁷⁶

¹⁷⁵ Sydnes et al (n 3) 120.

¹⁷⁶ *ibid*.

Over the years, Arctic nations have together participated in over ten live and table top joint exercises, with more currently planned. Serving to train for real Arctic emergencies, nations commit their forces and fleets to these efforts, and it contributes greatly to the overall running of the actual SAR regime.

The "Live" Arctic SAR Regime

Bearing in mind the many moving parts and high levels of planning and effort present in Arctic search and rescue, how would a real emergency in the Arctic play out?

Each emergency situation and subsequent rescue is unique and no two are ever the same. The variation in the scale, type, and location of Arctic emergencies will determine the SAR operations and processes employed, thus no "standard" rescue exists. However, many of the components and plans of the Arctic SAR regime are utilised each time. The domestic response system of the various Arctic nations, for example, all follow the same steps in the registering and managing of the rescue efforts and the coordinating and deploying of rescue units. When an emergency is first registered by national authorities, usually by way of distress calls or emergency notification systems, rescue coordination centres are responsible for leading search and rescue operations and coordinating the various national agencies. While the decisions of the RCCs may differ between countries based on the different national SAR structures, each RCC will follow the same minimum international documentation for SAR operational purposes.¹⁷⁷ The documentation referenced by RCCs and JRCCs include the various SAR agreements, the IAMSAR manual, and additional IMO Codes and Manuals on subjects of signalling, dangerous goods and standard marine communications. While this list does not cover other non-SAR related tasks that RCC's may be required to perform, it does to an extent standardise

¹⁷⁷ International Maritime Organization, 'Radiocommunications and Search and Rescue' (*International Maritime Organization*, 22 February 2017) <<http://www.imo.org/en/OurWork/Safety/RadioCommunicationsAndSearchAndRescue/SearchAndRescue/Pages/IMO-documents-relevant-to-SAR.aspx>> accessed 13 October 2018.

national search and coordination procedure for RCCs across all countries, including Arctic nations.

From this point, RCCs will defer to their own national policies and instructions to execute rescues, coordinating their various SAR agencies and deploying units to conduct rescues in their areas of responsibility. In doing so, RCCs may also choose to request assistance from other neighbouring states or vessels that may be in the area of distress. For these cases, and also in the case of emergencies bordering multiple SAR boundaries, countries have demonstrated the importance of drilling joint rescues. As the likelihood of large-scale emergencies grow with the increasing accessibility of the Arctic, the prospect of requiring the resources from multiple nations increases as well. Depending on the nature and location of the emergency, RCCs may also designate lead coordination responsibilities to their joint rescue coordination centres. In Canada, for example, the responsibility for launching an air or maritime response in Canada's North generally rests with the JRCC in the region where the response is needed.¹⁷⁸ This was designed in response to the vast distances in the Canadian Arctic and the very real probability of requiring air units in support of the marine units for the long distances they need to travel while en-route to an emergency.

¹⁷⁸ Department of National Defence, 'Search and Rescue (SAR) in the North' (*Government of Canada, Department of National Defence*, Last modified 2018) <<http://www.forces.gc.ca/en/operations-canada-north-america-current/north-sar.page>> accessed 12 October 2018.

4 Canada's Search and Rescue System

4.1 Canada's SAR History and Policy

In 1978, Canada acceded to the SOLAS Convention, thus undertaking the necessary arrangements for coastal watching and for the rescue of persons in distress at sea.¹⁷⁹ Later, in 1982, Canada also signed the UNCLOS (high seas) and ratified in 2003, wherein they were bound to maintain adequate and effective SAR services under Article 12 (2).¹⁸⁰ In 1979, Canada also defined its commitments and responsibilities through the ratifying of the international SAR agreement.

Together, with the implementation of additional recommendations and best practice guidelines from organisations such as the IMO and ICAO, these requirements formed the various parts which converged to create Canada's search and rescue program. Prior to this, however, a singular, systematic approach to national SAR was generally lacking in earlier years. This became apparent following the 1982 *Ocean Ranger* disaster, the sinking of a semi-submersible mobile offshore drilling unit in the Canadian waters of Newfoundland, in which all 84 crew members perished.¹⁸¹ The 1986 Ottawa-Newfoundland led commission following the event exposed serious deficiencies in the way in which the Canadian government approached search and rescue services and organisation. The commission was critical of the federal government's search and rescue response, principally its reliance on old search and rescue infrastructure, such as 20-year old helicopters which were ill-equipped for off-shore rescue. In response to the commission's

¹⁷⁹ CAMSAR (n 5) Sec. I-1.07 (E) p.1 of 2.

¹⁸⁰ *ibid.*

¹⁸¹ Robert D. Pitt, 'Ocean Ranger' (*The Canadian Encyclopedia*, Last edited 4 March 2015) <<https://www.thecandianencyclopedia.ca/en/article/ocean-ranger>> accessed 8 March 2019.

report, the Canadian government bolstered SAR infrastructure, carrying on to surpass the commission's recommendations by centralising Canada's SAR program under one administrative department in 1986, giving birth to the National Search and Rescue Program (NSP).

The National Search and Rescue Program of Canada was established as the national coordinating authority for Canada's search and rescue policy.¹⁸² The NSP, which until 2015 was administered by the National Search and Rescue Secretariat, is the amalgamation of all of Canada's collective domestic search and rescue activities.¹⁸³ In 2015, the NSP was absorbed into the Emergency Management and Programs Branch of Public Safety Canada.¹⁸⁴

Since then, Canada's commitment to domestic search and rescue has been further reflected in subsequent Cabinet decisions and legislations, such as the Canada Shipping Act (2001) and the Oceans Act. (1997), as well as non-binding documents, such as Guidelines for the Operation of Passenger Vessels in Canadian Arctic Waters.¹⁸⁵ There is no shortage in the amount of literature on processes for emergency management and preparedness produced by the various Canadian government systems. This literature includes checklists and templates for identifying hazards, preparing emergency plans, creating emergency asset inventories, and establishing emergency networks and partnerships.^{186 187} At the federal level, SAR policy is co-ordinated under the National Search and Rescue Program.

¹⁸² Public Safety Canada, 'National Search and Rescue Program' (*Government of Canada*, Last modified 27 September 2017)

<<https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rspndng-mrgnc-vnts/nss/index-en.aspx>> accessed 8 October 2018.

¹⁸³ Department of National Defence, 'About Search and Rescue (SAR)' (*Government of Canada*, Last modified 11 November 2018)

<<https://www.canada.ca/en/department-national-defence/services/operations/-military-operations/search-rescue.html>> accessed 8 December 2018.

¹⁸⁴ Public Safety Canada, 'National Search and Rescue Program' (n 182).

¹⁸⁵ CAMSAR (5) Sec. I-1.07 (E) p.1 of 2.

¹⁸⁶ Funston (n 1) 17.

¹⁸⁷ This literature can be found by visiting:

<https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rspndng-mrgnc-vnts/nss/index-en.aspx>.

4.2 The National Search and Rescue Program

With Canada's participation in the International Civil Aviation Organization and the International Maritime Organization, Canada has adopted search and rescue standards and practices in accordance with the treaties of these various organisations. As previously discussed, this is achieved primarily through the implementation of convention articles and recommendations into domestic law and best practice guidelines.

Today, Canada's SAR program functions through the complex partitioning of search and rescue regions by geography and jurisdiction. The critical importance of search and rescue is reflected by a multi-jurisdictional approach in which the National SAR program functions as a cooperative effort by federal, provincial and municipal governments along with other SAR organisations.¹⁸⁸ Despite the various jurisdictions, the NSP attempts to bridge the efforts of the federal, provincial, territorial and local search and rescue authorities in the realising of Canada's formal objective: [to] "save lives by enhancing SAR prevention and provide effective and affordable SAR services in Canada's SAR area of responsibility."¹⁸⁹

4.3 The Organisation of Canada's Arctic SAR

Canada's SAR Structure

Federal Departments Responsible for SAR

In Canada, search and rescue (SAR) is a shared responsibility. Various federal departments and authorities are involved due to the country's immense size, range of terrain and weather.¹⁹⁰

Canada is divided into provinces and territories, both featuring very different governance structures. Territories, as per the Constitution Act of 1867, are under federal control and receive their legislative authority from the

¹⁸⁸ CAMSAR (n 5) Sec. I-1.07 (E) p.1 of 2.

¹⁸⁹ *ibid.*

¹⁹⁰ Coast Guard and Fisheries and Oceans Canada 'SAR Seamanship Reference Manual' (1st edn Canadian Government Publishing 2000) 3.

federal government through the process of devolution. Provinces, on the other hand, receive their authority to govern from the Constitution.

In 1999, under the Nunavut Act and via the Nunavut Land Claims Agreement Act, Nunavut separated from the Northwest Territories and officially became a territory of Canada.¹⁹¹ The agreement allowed for the Inuit of the central and eastern Northwest Territories to form their separate territory in which they had certain features, such as Inuit land titles, rights to resources and the establishment of federally funded national parks.¹⁹²

Search and rescue can be understood in three components: ground, maritime and air. In Canada, in order to distribute the burden and pool resources, these components are divided between multiple departments and agencies.

Ground search and rescue is the responsibility of provinces and territories, and in this case does not involve federal participation apart from occasional support from the Canadian Rangers (a division of the Federal Canadian Armed Forces). Usually, ground search and rescue will be delegated to the police force of the SAR incident's jurisdiction, such as Royal Canadian Mounted Police (RCMP), Peace Officers or municipal police. Each province or territory requires emergency search and rescue strategies and programs to initiate in a given SAR incident on land, or in Canada's internal waters. Nunavut utilises the RCMP and local police for its ground SAR. They also use civilian volunteers and can also request further assistance from the Canadian Rangers for additional support if necessary.¹⁹³

Maritime and air search and rescue on the other hand, is the responsibility of the Canadian federal government. Coordinating SAR services for these two components falls under the organisational umbrella of two separate, yet collaborating federal departments.

The two federal departments involved in Canada's search and rescue system are the Department of National Defence (DND) and the Department of Fisheries and Oceans Canada (DFO). The Department of National Defence is responsible for aeronautical search and rescue, and the Department of Fisheries and Oceans is responsible for maritime search and rescue (DFO) anywhere within Canada's designated area of responsibility.

¹⁹¹ Kikkert (n 59).

¹⁹² Nunavut Land Claims Agreement Act, SC 1993, c29.

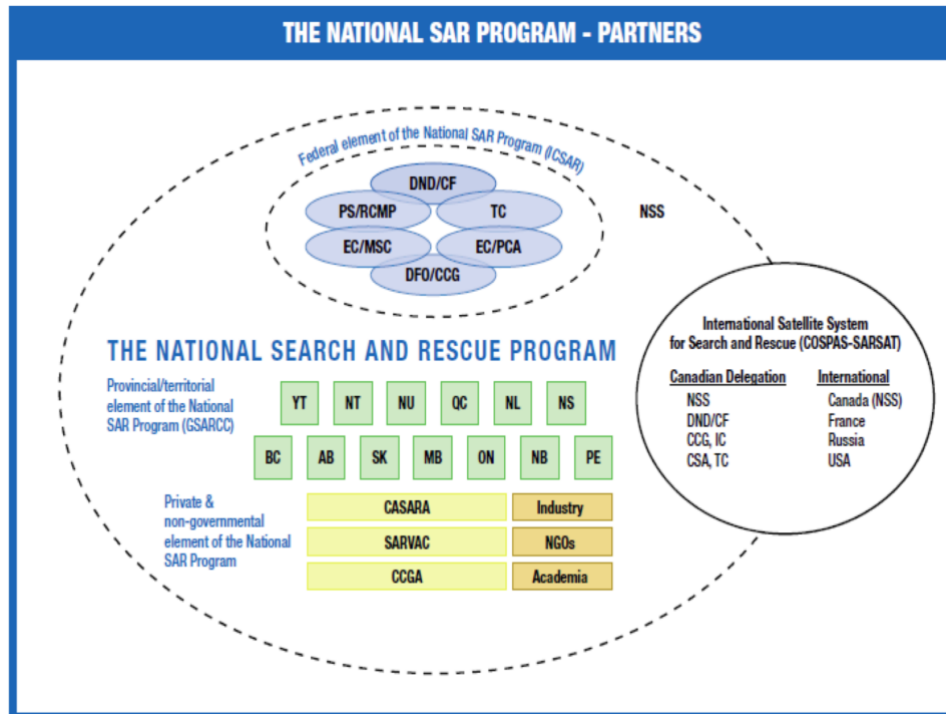
¹⁹³ SAR Seamanship Reference Manual (n 190).

Figure 7. Canada's Search and Rescue Response Authorities¹⁹⁴

CANADA'S SAR RESPONSE AUTHORITIES	
Type of SAR Incident	Lead Authority
Aircraft incidents <ul style="list-style-type: none"> Anywhere in Canada 	Canadian Armed Forces
Maritime incidents <ul style="list-style-type: none"> On the oceans Coastal waters and the Great Lakes/St. Lawrence River system 	Canadian Coast Guard
Ground and Inland Water (GSAR) <ul style="list-style-type: none"> On land (e.g. hikers, hunters, lost persons) On inland waterways (e.g. pleasure boaters, anglers, paddlers) 	Provincial/territorial governments; usually delegated to the police force of jurisdiction.
SAR in National Parks, National Historic Sites and Marine Conservation Areas <ul style="list-style-type: none"> On land (e.g. hikers, mountain bikers) On inland waterways (anglers, paddlers) 	Parks Canada Agency

¹⁹⁴ Public Safety Canada, 'Quadrennial Search and Rescue Review' [2013] 11 (Quadrennial Search and Rescue Review 2013)

Figure 8. The Canadian National Search and Rescue Program¹⁹⁵



¹⁹⁵ Quadrennial Search and Rescue Review 2013 (n 194).

The lead minister for search and rescue (LMSAR) serves as head of the Department of National Defence. At the national level. The LMSAR is designated as the competent authority responsible for search and rescue in Canada. Together, with the Department of Fisheries and Oceans, the Department of National Defence is responsible for the coordination of the National Search and Rescue Program and the development of national SAR policy.

The Departments of National Defence and Fisheries and Oceans provide the administration and organisation for Canada's search and rescue program. However, they are not equipped with the force, fleet, or operational knowledge to conduct search and rescue activities. The DND and the DFO have corresponding agencies who perform the actual SAR operations.

Federal Agencies Responsible for SAR

The Department of National Defence employs the Canadian Armed Forces (CAF) to act as the lead authority responsible for aeronautical SAR. To do this, the CAF utilises the Royal Canadian Air Force (RCAF), its aircrafts, and infrastructure. The Department of National Defence also coordinates the activities of the Civil Air Search and Rescue Association (CASARA), a volunteer-based organisation which supports the CAF during SAR operations with the use of certified civilian pilots trained for searching and reconnaissance operations.¹⁹⁶

The Canadian Coast Guard, on the other hand, is a special operating agency of the Department of Fisheries and Oceans, and detects maritime incidents, works with the Canadian Armed Forces in the coordination and delivery of maritime SAR response within areas of federal responsibility, provides maritime resources to assist with aeronautical SAR operations as necessary, and when and where available, provides SAR resources to assist in humanitarian incidents within provincial/territorial jurisdiction. The Canadian Coast Guard also supports the Canadian Coast Guard Auxiliary, who similar to the Civil Air Search and Rescue Association, are specialised volunteers trained to provide and assist in maritime search and rescue.

¹⁹⁶ CAMSAR (n 5) Sec.I-2.13 (E) p. 1 of 2.

Scope of Operation

For aeronautical and maritime search and rescue, Canada's area of responsibility has been defined by the International Civil Aviation Organization (ICAO) agreements for aeronautical SAR, and the International Maritime Organization (IMO) agreements for maritime SAR.¹⁹⁷ This area has been further solidified by the Arctic SAR agreement, and reiterates the extent of Canada's jurisdiction all the way to the geographical North Pole at 90°.¹⁹⁸ In accordance with the IMO SAR Plan and ICAO Regional Air Navigation Plans, the Canadian federal SAR area of responsibility has been divided into three search and rescue regions (SRRs) for maritime and aeronautical SAR coordination."¹⁹⁹ The three SRRs are Victoria, Trenton and Halifax. These regions have been specifically delineated with regards to where SAR assets are located across the country, and the response times of their various assets.²⁰⁰

Each SRRs is headed by a joint rescue coordination centre. In fulfilling the requirements of the international SAR agreement to provide rescue coordination centres, Canada established joint co-ordination centres in each region to systematise a regional based federal SAR program.²⁰¹

Regarding Arctic search and rescue, responsibility for launching an air or marine SAR response in Canada's North generally rests with the Joint Rescue Coordination Centre (JRCC) in the region where the response is needed.²⁰² Especially if the rescue in question requires air and marine assistance. Under the SAR program, the DND and CCG coordinates the response to air and maritime SAR incidents through jointly staffed JRCCs. JRCC Victoria provides the primary SAR response to the Yukon Territory, JRCC Trenton covers the Northwest Territories and Nunavut, including the north of Baffin Island, JRCC Halifax covers the southern half of Baffin Island (Figure 9). As a side point, JRCC Halifax has been designated as the "Canadian Point of Contact for Maritime SAR" for the international community, entailing that JRCC Halifax guarantees assistance on request to foreign rescue coordination centres Canadian vessels in foreign waters.

¹⁹⁷ CAMSAR (n 5) Sec. I-1.04 (e) p.1 of 4.

¹⁹⁸ The Arctic Institute (n 144).

¹⁹⁹ CAMSAR (n 5) Sec. I-1.04 (e) p.1 of 4.

²⁰⁰ Department of National Defence (n 183).

²⁰¹ Sydnes et al (n 3) 114.

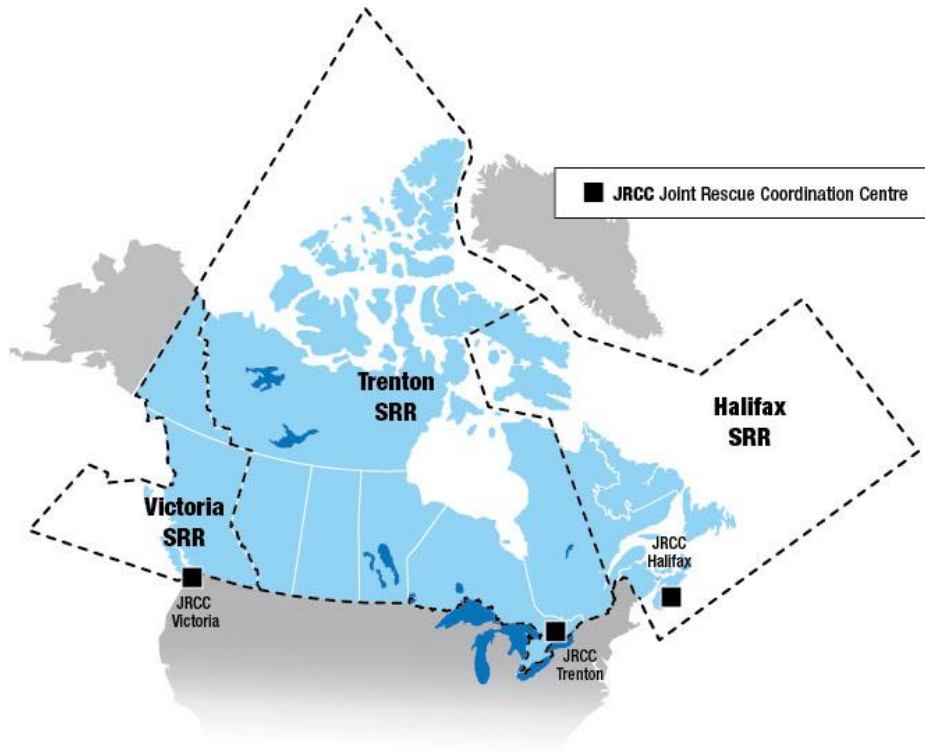
²⁰² Department of National Defence (n 183).

Despite the differences in the search and rescue regions, the JRCCs all operate under the same procedures and direction of the National SAR Program, which in turn systemises SAR across the three regions.²⁰³

As of October 2018, the Department of Fisheries and Oceans Canada and the Canadian Coast Guard jointly announced the creation of a new, standalone Arctic administrative region. This fourth Coast Guard Region will encompass Nunavut, and areas of the Northwest Territories, Northern Quebec and Labrador. At the time of this thesis, no further information has been disclosed regarding the delineation of this area. No official re-drawn map of the regions has been made available as of this date. For the interim, and bearing in mind this development, this thesis will continue to utilise Canada's current structuring as a basis for analysis. The establishment of this new region may have positive impacts on critical gaps that are discussed later in this study.

²⁰³ Public Safety Canada (n 182).

Figure 9. Canada's 3 Search and Rescue Regions^{204 205}



The boundaries of the three search and rescue regions²⁰⁶

²⁰⁴ *ibid.*

²⁰⁵ Administrative and operational regions for search and rescue in Canada as of August 1st 2019; the announcement of the new CCG and DFO Arctic region notwithstanding.

²⁰⁶ Victoria SRR – 54°42.5'N 130°36.5'W, along the Alaska/Canada border to the Beaufort Sea, east along the shoreline to the Yukon/North West Territory border, south along the Yukon/North West Territory border to 60°00'N, east along 60°00'N to the British Columbia/Alberta border, south along the British Columbia/Alberta border to the Canada/United States border, west along the Canada/United States border to 48°30'N 124°45'W, 48°30'N 125°00'W, 48°20'N 128°00'W, 48°20'N 145°00'W, 54°40'N 140°00'W, 54°40'N 136°00'W, 54°00'N 136°00'W, 54°13'N 134°57'W, 54°39.45'N 132°41'W and 54°42.5'N 130°36.5'W.

The Canadian Armed Forces

The Canadian Armed Forces (CAF) have the main responsibility for providing SAR from the air. They also coordinate the national response for air and maritime SAR under the authority of the Department of National Defence. In 1951, the Canadian Cabinet delegated the responsibility for maritime SAR coordination to the Royal Canadian Air Force.²⁰⁷ The CAF is subsumed into and follows military command structure. Heading this hierarchy is the Canadian Joint Operations Command (CJOC) (Figure 8).

On average, CAF assets are tasked to respond to about 1000 SAR missions every year.²⁰⁸ The SAR activities of the CAF are extensive. However, the basic SAR tasks include:²⁰⁹

Trenton SRR – 70°00'N 080°00'W, 64°00'N 080°00'W, 62°00'N 070°00'W, 46°42'N 070°00'W, westerly along the Canada/United States border to the Alberta/British Columbia border, north along the Alberta/British Columbia border to 60°00'N 120°00'W, westerly to 60°00'N 124°00'W, north along the Yukon/North West Territory border to the Beaufort Sea, westerly along the coast to the Canada/Alaska border, north along 141°00'W to the North Pole, south to 82°00'N 060°00'W, 78°00'N 075°00'W, 76°00'N 076°00'W, 70°00'N 063°00'W and west to 70°00'N 080°00'W.

Halifax SRR – 64°00'N 080°00'W, 70°00'N 080°00'W, 70°00'N 063°00'W, 65°00'N 057°45'W, 63°00'N 055°40'W, 58°30'N 050°00'W, 58°30'N 030°00'W, 45°00'N 030°00'W, 45°00'N 053°00'W, 43°36'N 060°00'W, 41°52'N 067°00'W, 44°30'N 067°00'W, north to the Canada/United States border, westerly along the Canada/United States border to the 70th meridian, north along the 70th meridian to 62°00'N 070°00'W and north-west to 64°00'N 080°00'W 206.

²⁰⁷ CAMSAR (n 5) Sec. 1.06 (E) p.1 of 4.

²⁰⁸ Department of National Defence (n 183).

²⁰⁹ The entire list of CAF search and rescue activities are: the provision of SAR aircraft in response to aeronautical SAR incidents within the Canadian AOR; the setting of priorities pertaining to the allocation of SRUs to SAR operations; the provision of ground SAR and humanitarian assistance, as a complementary tasking; the formulation and promulgation of SAR policy (in collaboration with ICSAR); the establishment of operating standards and the provision of SAR training for the coordinated SAR system in collaboration (when appropriate) with CCG authorities; the evaluation of SAR equipment and procedures in collaboration (when appropriate) with CCG authorities; the review of SAR services, facilities and SRUs in collaboration (when appropriate) with CCG; the evaluation of CASARA capabilities and readiness, and coordination of CASARA operational activities; and the efficient operation of the Canadian components of the COSPAS-SARSAT system including CMCC and associated ground stations (local user terminals).

1. To coordinate, control and conduct SAR operations in relation to aeronautical SAR incidents within the Canadian area of responsibility
2. Provide search and rescue units (SRUs) in support of the prosecution of maritime SAR operations and to exercise ultimate authority in the allocation of all SRUs during a SAR incident
3. To conduct and/or coordinate ground searches in relation to aeronautical SAR incidents.
4. To provide the resources to operate the Canadian components of the COSPAS- SARSAT system
5. The efficient operation of the aeronautical and maritime components of the coordinated SAR system
6. The provision and operation of the JRCCs, CMCC and other SAR installations, in conjunction with the CCG
7. The coordination, control, and conduct of aeronautical SAR operations within the Canadian AOR and between Canada and other countries, in accordance with existing agreements.²¹⁰

Additionally, the CAF may also assist with ground SAR efforts, medical evacuations and other incidents where people are in distress. However, this assistance is done so upon the request of provincial, territorial or municipal authorities.²¹¹

The Civil Air Search and Rescue Association (CASARA)

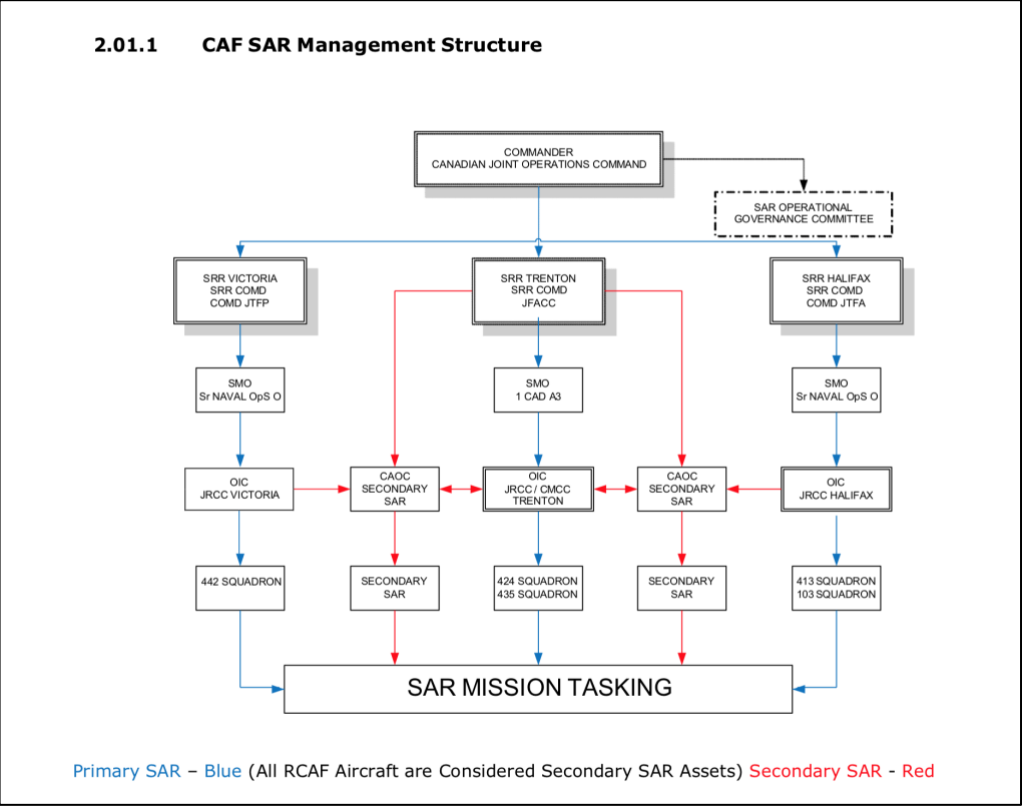
The Canadian Armed Forces assumes responsibility for sponsoring and funding the Civil Air Search and Rescue Association (CASARA). This volunteer organization was established in 1985 helps the CAF respond to incidents that involve air SAR. CASARA utilises civilian/private aircrafts and trained volunteer crews for SAR missions. They engage in search activities and also provide communications services."²¹²

²¹⁰ CAMSAR (n 5) Sec. 1.06 (E) p.3 of 4.

²¹¹ Department of National Defence (n 183).

²¹² Department of National Defence (n 183).

Figure 10. Canadian Armed Forces SAR Management Structure²¹³



²¹³ Department of National Defence (n 183).

The Canadian Coast Guard

The Canadian Coast Guard plays a critical role in Canada's search and rescue; they have the primary responsibility for the provision of the maritime operational component of the federal SAR program. For this purpose, the CCG has the basic SAR tasks to²¹⁴: (1) detect maritime incidents and, in collaboration with the CAF, coordinate, control and conduct SAR operations relating to maritime SAR incidents within the Canadian area of federal responsibility and (2) provide maritime units and communications in support of the prosecution of aeronautical SAR operations where applicable.²¹⁵

The Coast Guard is also assigned complementary tasks, such as the provision of search and rescue units during humanitarian incidents and to support Transport Canada in SAR prevention through participation and educational programs. The CCG is a leading authority on maritime operations (especially in the Arctic). In addition to providing search and rescue services, the CCG also provides services regarding boating safety, environmental response, icebreaking, marine navigation services, and marine

²¹⁴ The entire list of the Canadian Coast Guards SAR tasks are: the provision of and participation in the maritime component of the joint rescue coordination centres (JRCCs) as well as the provision, operation and equipping of the Quebec Maritime Rescue Sub-Centres (MRSC) and other SAR installations, in cooperation with the Canadian Armed Forces (CAF); in collaboration with the CAF, the coordination, control and conduct of maritime SAR operations within the Canadian area of responsibility (AOR); the provision of maritime advice and assistance to the CAF in the coordination of aeronautical SAR and other emergencies which may require the use of maritime facilities; the provision of maritime SAR units (SRUs) in response to SAR incidents within the Canadian AOR, the activities of which SRUs are coordinated by JRCCs and Quebec MRSC; the provision of humanitarian assistance, as a secondary task, when such is deemed best provided by CCG SRUs; the formulation and promulgation of federal SAR policy (in collaboration with the Interdepartmental Committee on Search and Rescue); the establishment of levels of service, performance and operating standards; the provision of maritime SAR training for the coordinated SAR system in collaboration (when appropriate) with the CAF; the organization, coordination and administration of Canadian Coast Guard Auxiliary activities; the evaluation of SAR services, equipment and procedures, in collaboration with the CAF; the review of SAR services, installations and units, in collaboration with the CAF; and the provision of maritime distress and safety communications and alerting services.

²¹⁵ CAMSAR (n 5) Sec. I-1.07 (E) p.2 of 2.

communication and traffic services.²¹⁶ As a result, the Coast Guard has inadvertently become the go-to agency regarding Arctic marine activities and operational knowledge, and are constantly advising agencies and actors engaged in SAR operations to this effect.²¹⁷

The CCG SAR program includes four elements: management and monitoring, operations, prevention, and volunteers.²¹⁸

The Canadian Coast Guard Auxiliary

The Canadian Coast Guard oversees the activities of the Canadian Coast Guard Auxiliary (CCGA), a highly effective, Canada-wide volunteer organisation that provides additional support to the Canadian Coast Guard. CCGA members and vessels have a limited authority to assist the CCG during SAR response and prevention activities²¹⁹

The Government of Canada contributes financial support to CCGA in line with their contractual agreement to cover certain expenses, such as insurance while it is engaged in authorised SAR operations an activity. The CCGA was created in address a deficit in SAR vessels and personnel, without having to radically increase budgets or infrastructure. The Canadian Coast Guard assists Auxiliary members with the specialised SAR training necessary to become members. In return, the CCG can rely on some 5,000 civilian volunteer members and 1,500 vessels to supplement its maritime SAR capabilities.²²⁰ Whereas members of the Civil Air Search and Rescue Association are authorized and trained in reporting and surveillance operations, the Canadian Coast Guard Auxiliary assists and performs actual maritime search and rescue operations.

The Canadian Coast Guard Auxiliary has proved a successful program in the past. In recognition of this, the Canadian Coast Guard have doubled down on its drafting and training targets, especially in the Northern waters of Canada.

²¹⁶ SAR Seamanship Reference Manual (1-3).

²¹⁷ CAMSAR (n 5) Sec. I-1.07 (E) p.2 of 2.

²¹⁸ SAR Seamanship Reference Manual (1-3).

²¹⁹ CAMSAR (n 5) Sec.I-2.13 (E) p. 1 of 2.

²²⁰ SAR Seamanship Reference Manual (n 190) 1-3.

Canada's SAR Force and Fleet

Force

Canada's search and rescue aeronautical force is comprised of (1) primary rotary-wing aircrafts (helicopters) and (2) primary fixed-wing aircrafts (airplanes).

The RCAF employs CH-149 Cormorant and CH-146 Griffon helicopters to respond to SAR incidents. Helicopters offer the advantage of swift response times, hovering, landing and hoisting capabilities. However, their range is limited. Airplanes on the other hand, are able to cover long distances. The RCAF uses CC-115 Buffalo and CC-130 Hercules fixed-wing aircrafts to supplement their SAR force. These airplanes, despite being able to drop crucial survival equipment, also have their drawbacks, such as requiring airstrips for take-off and landing. Ideally, a SAR force that features both aircraft types is best. The Canadian Armed Forces has (in total) available to them:

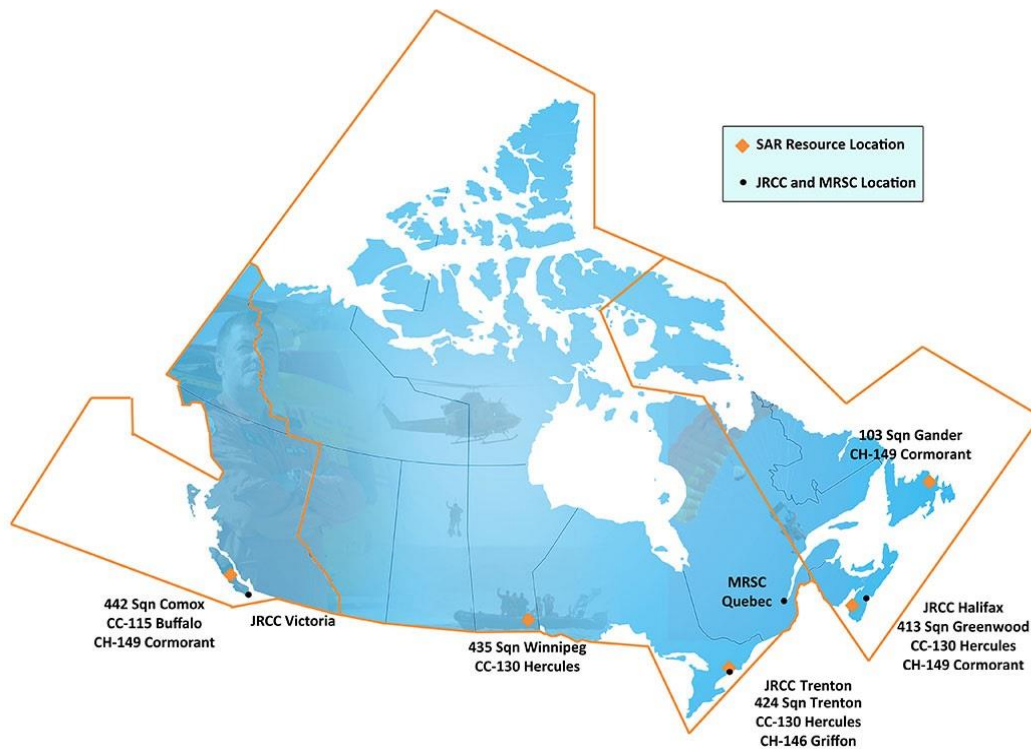
- 14 x CC-130 *Hercules* Aircraft;
- 6 x CC-115 *Buffalo* Aircraft
- 14 x CH-149 *Cormorant* Helicopters;
- 5 x CH-146 *Griffon* Helicopters²²¹

The aircraft units dedicated to SAR activities are stationed at regional RCAF bases scattered across the country (Figures 11,12). Accompanying every SAR aircraft are Canadian Armed Forces SAR technicians; specialised personnel trained in rescue techniques, including Arctic rescue. The CAF have 140 SAR technicians who provide pre-hospital medical care and rescue for aviators, mariners and others in distress. They are specially trained in parachuting, diving, mountain climbing and helicopter rescue.²²²

²²¹ Quadrennial Search and Rescue Review 2013 (n 194).

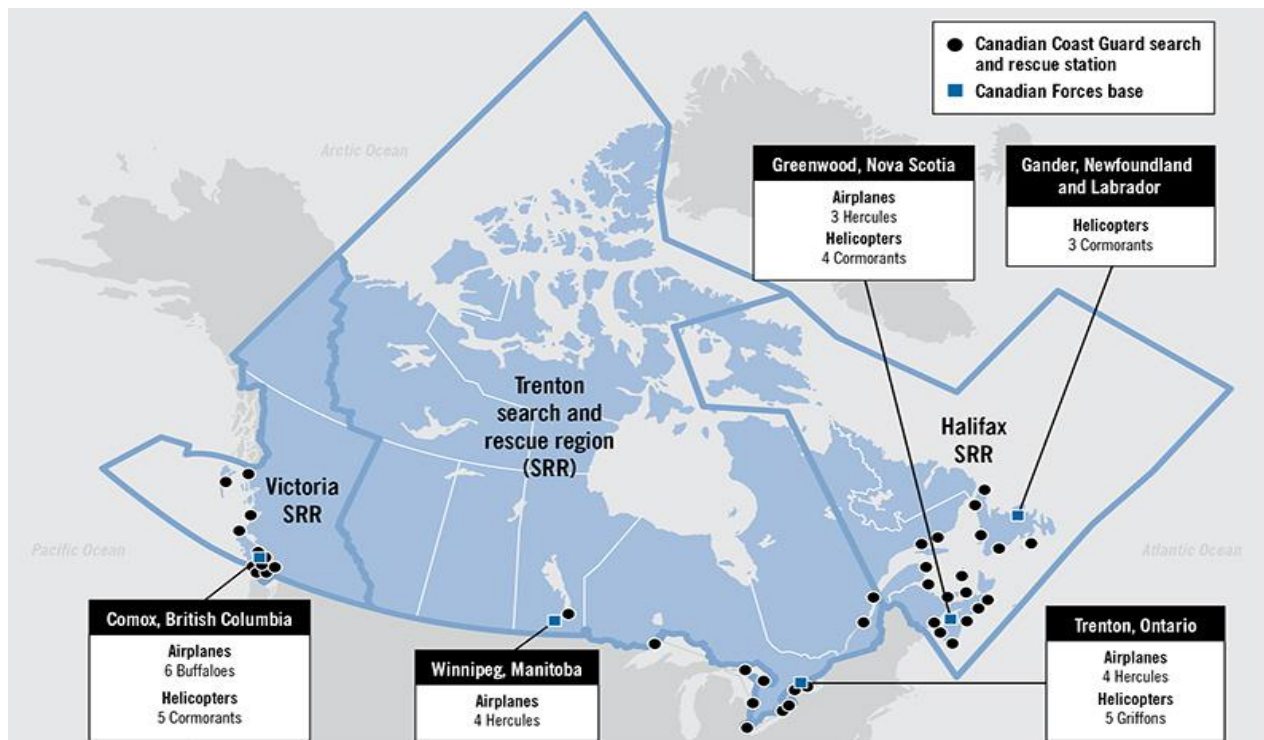
²²² Department of National Defence (n 183).

Figure 11. The Royal Canadian Airforce Base Location²²³



²²³ Quadrennial Search and Rescue Review 2013 (n 194) 10.

Figure 12. The Royal Canadian Airforce SAR Resource Distribution²²⁴



²²⁴ Office of the Auditor General of Canada, '2013 Spring Report of the Auditor General Canada', *Chapter 7 – Federal Search and Rescue Activities* [2013] (2013 Auditor General Report).

Fleet

Canada's Search and rescue fleet is comprised of primary SAR vessels, multi-tasked SAR vessels, secondary SAR vessels and Canadian Coast Guard Auxiliary vessels.

Primary SAR vessels are specifically designed and tasked with search and rescue duties, and are specially equipped and supplied with trained crew for this purpose. Primary SAR vessels display the words "RESCUE/SAUVETAGE" and are painted red and white in accordance with Canadian Coast Guard colours. Due to their expertise, primary SAR vessels are generally stationed in areas with the highest risk of SAR incidents.²²⁵ The Canadian Coast Guard maintains a fleet of 15 icebreakers as primary vessels stationed in Eastern Canada and the Arctic: 2 heavy icebreakers, 4 medium icebreakers, and 9 multi-purpose vessels.²²⁶ However, most of these vessels are positioned in Eastern Canada in order to keep important shipping lanes such as the St. Lawrence clear of ice during the winter. According to the Canadian Coast Guard (under average ice conditions) an icebreaker will be on scene to provide icebreaking services within 10 hours in the Canadian Arctic.²²⁷ The Canadian Coast Guard also follows a self-imposed SAR policy in which all primary vessels maintain a maximum 20-minute state readiness, meaning they require mobilisation and dispatch to the incident within 20 minutes.²²⁸

Multi-tasked SAR vessels are also CCG vessels; however, they are normally charged in carrying out other Coast Guard tasks as their primary directive. Multi-tasked SAR vessels nonetheless uphold regular SAR operational standards and can be employed to carry out or support SAR activities. Multi-tasked SAR vessels are usually relegated to their specific SAR area and can stand in for primary SAR vessels when required.²²⁹

²²⁵ Canadian Coast Guard, 'Maritime Search and Rescue (SAR) in Canada' (*Government of Canada*, Last modified 27 April 2018) <http://www.ccg-gcc.gc.ca/eng/CCG/SAR_Maritime_Sar> accessed 14 October 2018.

²²⁶ Canadian Coast Guard, 'Icebreaking operations services' (*Government of Canada*, Last modified 30 April 2019) <www.ccg-gcc.gc.ca/icebreaking/home> accessed 14 October 2018.

²²⁷ *ibid.*

²²⁸ SAR Seamanship Reference Manual (n 190) 1-4.

²²⁹ Canadian Coast Guard (n 226).

Secondary vessels refer to all other government vessels, and may also be utilised for SAR activities. However secondary vessels lack the exceptionally high level of search and rescue proficiency provided by primary vessels.

At the disposal of the Canadian Coast Guard are all vessels registered and trained by the Canadian Coast Guard Auxiliary. This totals some 1,133 vessels across Canada.²³⁰

While not a formal part of the fleet, the CCG may still count on and utilise vessels of opportunity to assist during distress incidents. Vessels of opportunity can be any vessel in the vicinity of an emergency, and under international law must assist to the best of their capacity. The obligations of vessels to aid is further codified in the *Canada Shipping Act*.²³¹

Canada's Arctic SAR

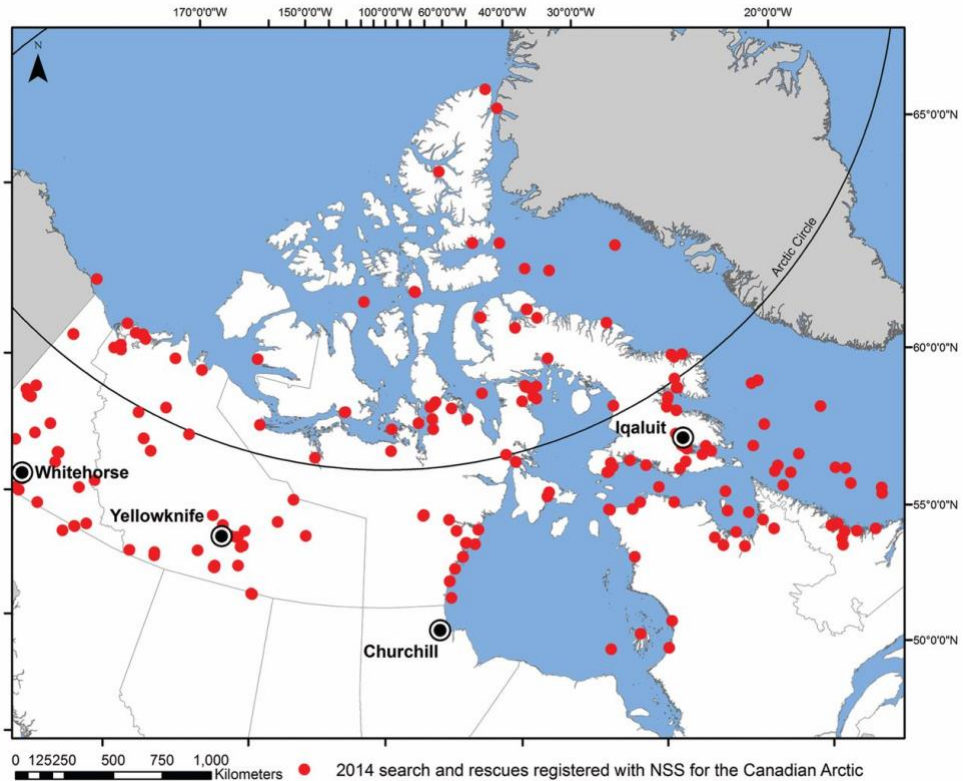
The distribution of search and rescue cases in Canada tends to correlate with the density of people across the country. Most of the SAR incidents within Canada happen along the coasts and the southern regions bordering the United States, where the highest numbers of people reside.²³² Comparatively few SAR incidents happen in the Canadian Arctic (Figure 13). However, the harsh environments, remoteness and limited available infrastructure compounds Arctic SAR incidents and response times, leading to higher risk of injury, death, or damage of property than in other areas.

²³⁰ *ibid.*

²³¹ *Canada Shipping Act*, SC 2001, c26.

²³² *Quadrennial Search and Rescue Review 2013* (n 194).

Figure 13. The Distribution of Canada's SAR Incidents in 2014



Canada's Arctic falls into two separate search and rescue regions, with the Yukon under the jurisdiction of JRCC Victoria and the Northwest Territories and Nunavut under JRCC Trenton. The Arctic is a unique region and presents its own challenges, yet the management of Arctic search and rescue occurs at facilities in the South far away from the Arctic itself. JRCC Trenton and its SAR assets for example, are approximately 2917 km from the Arctic community of Gjø Haven, 3183 km from Pond Inlet, 3513 km from Resolute, and 3426 km from Kugluktuk.²³³ For context, 3500 km is the approximate distance between London, England and Cairo, Egypt. As per the Arctic SAR strategy, these are all communities that fall under the management of JRCC Trenton. Although a JRCC can call on any SAR squadron to respond to a

²³³ Calculated for approximation by Author with use of Google Earth.

distress call in the North, in addition to be able request the support of any nearby military asset, there still remains a large deficit in SAR facilities and units in the Arctic (Figure 14).²³⁴ Is this deficit impacting Canada's SAR overall SAR responsibilities?

²³⁴ Department of National Defence (n 183).

Figure 14. Central and Arctic SAR Staff and Facilities



Considering most of Canada's Arctic Archipelago is surrounded by water, the Canadian Coast Guard generally plays a larger role in Arctic SAR than the Canadian Armed Forces. While the CCG does not maintain Northerly land-based facilities, there are numerous primary SAR vessels operating within Arctic waters throughout the entirety of the year. All of these CCG vessels have the ability to assist when necessary.

Incident Plan

Given the intricacies of the Canadian SAR program and system, it is worthwhile explaining how a real rescue in the Canadian Arctic would unfold under the current structure.

In the event of an emergency in the Canadian Arctic, a JRCC would be notified that a person or vessel may be in danger by either (1) a call from a ship radio or telephone or (2) a distress signal transmitted from emergency locating beacons on aircrafts or marine vessels. Canadian domestic law requires all vessels and aircrafts operating in Canada's area of responsibility to maintain the emergency contact information of the respective JRCC's of that region. JRCCs will continue to receive distress alerts transmitted by vessels and relayed from Canada's Marine Communications and Traffic Services (who monitor emergency radio frequencies) or by Canada's COSPAR/SARSAT network; a SAR satellite system used to detect and locate signals from distress beacons. Although Canada requires carriage requirements for equipment pertaining to the Global Marine Distress and Safety System (GMDSS) (a digital electronic communications system which sends distress and safety information), Canada's Arctic has been designated as a Sea Area A4; an area outside GMDSS coverage.²³⁵ As a result, Canada's JRCCs rely on radio distress calls, beacons and COSPAR/SARSAT for detecting and alerting in the Canadian Arctic.²³⁶ JRCCs are also able to monitor marine traffic in the Arctic through a reporting system known as the Arctic Canada Traffic System (NORDREG). Under the *Canada Shipping Act*, vessels are required to report their movements when operating in areas north of 60°N, including the Northwest Passage. NORDREG allows Canada (and the JRCCs) to keep a finger on the pulse of Arctic marine activity for which emergency response can be quickly mobilised if need be.

²³⁵ Northern Canada Vessel Traffic Services Zone Regulations SOR/2010-127.

²³⁶ Canadian Coast Guard (n 226)

Once a distress alert is received, the JRCC would task search and rescue units to respond. Joint Rescue Co-ordination Centres maintain current location information on all of the various primary, secondary and multi-tasking SAR vessels and aircrafts usable to them.

In response to Arctic marine emergencies, the Canadian Coast Guard vessels are usually designated as "On Scene Commander". This allows the CCG vessel to make use of the best available information and resources to develop appropriate search patterns and evacuation plans. The On Scene Commander is able to request additional support from the JRCC, and would always conduct SAR operations in discussion with the lead JRCC. The JRCC supplies important information to the On Scene Commander. The JRCC is able to determine and direct rescuers to places of safety, in addition to providing critical operational updates from modelling programs to determine things such as drift rates from a last known position. The On Scene Commander would be responsible for co-ordinating and conduction the search and rescue operations.

Indigenous Involvement

Comprising the majority of the local population in the Canadian Arctic, indigenous peoples are often involved in search and rescue; whether as victims, or as the first to observe and respond to an emergency in their territory.²³⁷

The Canadian Coast Guard is often active around Canada's northern communities, usually by way of helping supply vessels to reach isolated towns. Federal agencies and local communities are involved as allies in Arctic SAR.

Indigenous people's traditional, ecological and local knowledge has long been recognised for its inherent value, and the formal integration and utilisation of this knowledge is becoming increasingly included into Canada's search and rescue system. In using local indigenous knowledge in the planning and response to Arctic emergencies, it has been determined that initial response times have reduced in most cases.²³⁸

²³⁷ Arctic Council Emergency Prevention, Preparedness and Response, 'Arctic Environmental Hazards and National Mitigation Programs' (2015) 10.

²³⁸ *ibid* 11.

The Canadian Coast Guard often utilises local knowledge in rescue situations. Additionally, the Department of Fisheries and Oceans has launched new initiatives and funding to train and include northern communities into the Canadian Coast Guard Auxiliary, even providing training and materials in local Inuktitut language.²³⁹

Northern communities are also invested in bolstering search and rescue services for their areas. Climate change, economic and industry growth is a pervasive issue for many residents of Canada's north. The rapid changes in habitats and ecosystems, in addition to an added influx in people have challenged the abilities of northerners to respond to emergencies in their own localities. With these changes, traditional indigenous knowledge and ways of life begin to become undermined, and the likelihood of search and rescue incidents increases, for which northerners will bear the brunt of the consequences.²⁴⁰

Indigenous involvement can serve to contribute to the overall effectiveness of Canada's Arctic SAR. As experts on Arctic environments, indigenous people have unparalleled knowledge and expertise to lend throughout various processes such as SOP drafting, table top exercises, best practices and other documentation, all of which articulate the parameters of Canada's SAR program and operations to be used as evidence of their due diligence. Often overlooked, indigenous and indigenous knowledge is a remarkable resource, not only for its inherent value but also in the contributing to Canada's SAR program - keeping indigenous in mind as one of the primary users of Arctic SAR services.

²³⁹ Nunatsiaq News, 'Canadian Coast Guard Auxiliary grows to six Nunavik communities' (*Nunatsiaq News*, 9 November 2017) <https://nunatsiaq.com/stories/article/6567canadian_coast_guard_auxiliary_grow_s_to_six_nunavik_communities/> accessed 17 July 2019.

²⁴⁰ Funston (n 1) 7.

5 Canada's Efforts

5.1 Canada's Substantive Obligations for Arctic SAR

Canada's legal obligations to provide search and rescue services are based upon its participation in various international organisations and international treaties. The bulk of Canada's primary obligations to provide search and rescue in the Arctic are articulated in five international agreements: The Convention on International Civil Aviation, the International Convention for the Safety of Life at Sea, the International Convention on Maritime Search and Rescue, the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue, and the Agreement on Cooperation on Aeronautical and Maritime SAR in the Arctic (2011).

Canada has generated and modified search and rescue services and principles to satisfy the articles of these treaties as a party member. The treaty articles centred on search and rescue found within these five agreements reiterate the duty to render assistance from shipmasters and coastal states alike. However, other articles within these treaties exist that can be made applicable to safety, and therefore search and rescue. Articles such as vessel specifications, navigation practices and state to state cooperation to name a few. While there are many provisions to be applied to Canada's search and rescue responsibilities, the full list of applicable SAR articles, resolutions and annexes is broad and sizeable - far too sizeable for the purposes of this study. Thus, to illustrate the main responsibilities, primary SAR substantive obligations of these five main treaties are set out in the below table. The "primary" obligations refer to articles that (1) directly articulate the coastal state's duty to provide search and rescue facilities and (2) require the codification of the duty of shipmasters to render assistance into domestic law. In short, the obligations set out in 98(1) and 98(2) of UNCLOS. Canada is a party member to each of these international and regional agreements (Figure 15).

Figure 15. Canada's Substantive Obligations

Category of Legal Document	Legal Source	Article Number
United Nations International Treaty	United Nations Convention on the Law of the Sea (1982)	Articles 98 (1) Duty to Render Assistance 98 (2) Duty to Render Assistance
International Maritime Organisation Maritime Treaty	International Convention on Salvage (1989)	Articles 10 (1) Duty to Render Assistance 10 (2) Duty to Render Assistance 10 (3) Duty to Render Assistance

International Maritime
Organisation Maritime
Treaty

International Convention
for the Safety of Life At
Sea (1974)

Regulations

33 (1) Distress Situations: Obligations and
Procedures

33 (1.1): Distress Situations: Obligations and
Procedures

Regulation 33 (2): Distress Situations: Obligations
and Procedures

Regulation 33 (3): Distress Situations: Obligations
and Procedures

Regulation 33 (4): Distress Situations: Obligations
and Procedures

Regulation 33 (6): Distress Situations: Obligations
and Procedures

Regulation 7 (1): Search and Rescue Services

Regulation 7 (2): Search and Rescue Services

Reg. V/21: IAMSAR Carriage Requirement

International Maritime
Organisation Maritime
Treaty

International Convention
for Maritime Search and
Rescue (1979)

Annex Chapter 2-5

Regional Agreement

Agreement on
Cooperation on
Aeronautical and
Maritime Search and
Rescue in the Arctic
(2011)

Article
3 (3) Scope of Application of this Agreement
7 (3b) Scope of Application of this Agreement
7 (3f) Scope of Application of this Agreement

International Civil
Aviation Organisation;
International Treaty

Convention on
International Civil
Aviation (1944)

Article 25
Aircraft in Distress

5.2 Canada's Fulfilment of Substantive Obligations

Canada has two methods in fulfilling its substantive obligations for search and rescue: through the use of hard law, and through measures taken to implement that law, for example, guidelines, practices and operative procedures. The implementation of the law is subject to a due diligence standard: in other words, the authorities must take adequate care in carrying out their duties. Both methods will be examined in the below section.

Hard Law

In Canada, as a dualist system, becoming party to an international treaty does not make that treaty part of domestic law. To have full effect, Canada must take further measures to implement treaty articles into domestic law in order to uphold the agreement's provisions and intentions.

Canada has by all accounts translated the basic primary obligations of the various SAR treaties into domestic Canadian law. The duty to render assistance by both shipmasters and coastal states is thoroughly addressed within Canadian domestic law, established mainly through the *Canada Shipping Act (2001)*.

Fulfilling the Duty to Render Assistance: Shipmasters

The Duty to Render Assistance Article 98 (1) of UNCLOS is a concept found in many other subsequent treaties, as seen in the above legal matrix (figure 15). Canada has codified the duty to render assistance into Federal Law by placing masters under the positive duty to assist those in distress at sea. This is found primarily within the domestic legislation of the *Canada Shipping Act*. Section 131 regarding the answering of distress signals articulates:

Section 131

(1) Subject to this section, the master of a vessel in Canadian waters and every qualified person who is the master of a vessel in any waters, on receiving a signal from any source that a person, a vessel or an aircraft is in distress, shall proceed with all speed to render assistance and shall, if possible, inform the persons in distress or the sender of the signal.²⁴¹

Section 131 expands upon this duty later in the section, detailing the conditions in which a master may be released from their obligation to assist in addition to the parameters of requisition of assistance from other vessels.

Section 132 of the Act imposes a parallel obligation on masters upon finding a person in danger at sea, stating: "The master of a vessel in Canadian waters and every qualified person who is the master of a vessel in any waters shall render assistance to every person who is found at sea."²⁴²

Canada has criminalised the failure to comply with sections 131 or 132 of the *Canada Shipping Act*, exposing a master of a vessel to significant criminal consequences including: (1) Fine up to \$1,000,000 and or (2) imprisonment for up to 18 months or both.²⁴³

Pursuant to the *Canada Criminal Code*, masters of vessels may also face imprisonment for up to 5 years for failing to render assistance if he/she is involved in an accident, which extends to accidents involving another person, vehicle, vessel, or aircraft.²⁴⁴

In this regard, Canada has quite effectively fulfilled its duty to ensure that masters of vessels comply with their duty to render assistance by criminalizing the failure to do so. A voluntary IMO member state audit was undertaken by the United States, Germany, and Panama to determine if Canada substantially meets its obligations in respect of the mandatory IMO instruments to which it is a party. The audit determined that Canada overall meets these obligations, in which SOLAS (and its SAR provisions) were included in the scope of the audit.²⁴⁵

²⁴¹ Canada Shipping Act (n 231) Section 131.

²⁴² *ibid* Section 132.

²⁴³ *ibid* Section 137.

²⁴⁴ Canada Criminal Code, RSC 1985, c C-26.

²⁴⁵ 2013 Auditor General Report (n 224).

Fulfilling the Duty to Render Assistance: Coastal State

While the implementation of the duty of shipmasters to render assistance is quite clear and relatively straightforward, part (2) of Article 98 (regarding the operation and establishment of adequate coastal SAR services) is much more difficult to implement into domestic legislation. This concept is articulated several different ways within the language of the various conventions, however the core of this duty is best articulated by UNCLOS Article 98(2). As it is written: "Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring States for this purpose."²⁴⁶

Canada has made legislative efforts to accommodate this provision. The *Oceans Act* and the *Canada Shipping Act* sanction the authority of Fisheries and Oceans Canada to delegate maritime search and rescue coordination and set-up.²⁴⁷ Essentially, empowering the JRCCs and SAR coordinator to operate and carry out SAR operations.

Canada has also acted in line with second part of article 98(2) to enter into cooperative agreements by establishing a regional SAR agreement for the Arctic.²⁴⁸

Canada (in addition to its hard law efforts) has agreed to and implemented various Arctic SAR related soft-law instruments with other states. Soft law describes the variety of non-legally binding instruments used by states and organisations within international law and relations, and generally include quasi-legal instruments such as resolutions, agreements, and memorandums of understanding (MOUs). While not legally binding per se, soft law can nonetheless be involved in the production of normative legitimacy. Canada has adopted a variety of soft-law instruments to help achieve this.

Canada uses agreements or Memorandums of Understanding (MOUs) for search and rescue between various countries in order to strengthen

²⁴⁶ UNCLOS Art 98(2).

²⁴⁷ Fisheries and Oceans Canada, *Notice to Mariners 1 to 46 Annual Edition 2019*, Section D – Search and Rescue in Canadian and Adjacent Waters (Canadian Coast Guard DFO/2019-2020) 1.

²⁴⁸ Sydnes et al (n 3) 126.

cooperative search and rescue and help flesh-out any deficiencies Canada may have in its SAR services. The Agreement between the Government of Canada and the Government of the United States of America on Emergency Management Cooperation, for example, allows CAF SAR coordination centres to provide and give control of assets, such as aircrafts, for U.S. SAR missions when they require, and vice-versa.²⁴⁹ Canada is also part of the MOU Co-Operation Among Canada, US, UK Concerning SAR. These two soft-law agreements help perpetrate collaboration of SAR practices, and is evidence of Canada's intention towards fulfilling the duty to render assistance by way of cooperative SAR application. Joint Agreements are also in line with the intentions of the Arctic SAR Agreement in which co-operation is encouraged by a comprehensive overview of possible collaborative efforts to facilitate mutual SAR cooperation outlined in Art. 9. Utilising foreign units in situations requiring international cooperation depends on the location of the accident. For countries such as Sweden, Finland, Norway and Western Russia, which are relatively close to another, utilising foreign units could potentially be fairly efficient. The other Arctic countries are far apart and, even if bilateral cooperation would otherwise be fluent, the distance and response times would limit the use of closest neighbours' assets.²⁵⁰ This may be the outcome and reality of a collaborative rescue under the joint bi-lateral agreements, however that is relatively beside the legal point. The effort of creating such agreements, regardless of their effectiveness (to an extent) is still within the parameters of "reasonable measures".

Apart from bestowing authority onto the various branches of Canada's SAR operators for functionality purposes and entering into cooperative agreements, there are no other acts or pieces of legislation that codify Article 98 (2) into Canadian domestic law. This may be chalked up to the ambiguity of Article 98(2); the article lacks specificity. What is "adequate" or "effective" for a search and rescue program? Apart from enacting legislation to "set-up" Canada's SAR program, how are the other aspects of an "adequate" and "effective" search and rescue program codified - such as infrastructure, resources, response times and policy?

²⁴⁹ Dawnieca Palma (Canadian Joint Operations Command Public Affairs), 'Teamwork beyond borders: Canadian and U.S search and rescue teams work together' (*The Maple Leaf, Government of Canada*, Last modified 20 April 2018) <<https://ml-fd.caf-fac.ca/en.2018/04/12469>> accessed 2 January 2019.

²⁵⁰ Ikonon (n 17) 8.

While UNCLOS Article 98(2) omits any further details, the international SAR Convention does feature an Annex which imposes considerable obligations on parties, such as the setting up the shore installations. As a result, during the time of its inception, the SAR Convention was not ratified by as many countries as other treaties. To address this, the Annex was amended, so that "a coastal state does not require to have all the SAR resources necessary to respond to a distress signal within its entire maritime region."²⁵¹ Once again, this leaves room for significant interpretation and variation.²⁵² In fact, this was purposefully done in order to account for the different capabilities of states, similar to the environmental principle of common but differentiated responsibilities in environmental law.

Apart from the Annex to the International SAR treaty and the IAMSAR manual which helps States with the operational (rather than legal) implementation the international SAR treaty, Canada has no other official direction pertaining to its SAR program's legal extent or scope.

The obligation of coastal states to provide a SAR program found in UNCLOS Article 98 (2) is also found across other SAR related treaties - and is similarly vague. Sometimes vague language is utilised in treaty drafting to encourage higher numbers of state signatories, and as such international treaties are sometimes criticised for being non-specific in the ways in which they direct member conduct in the ratification process. The term "distress", for example, is not defined in the SOLAS convention. As a result, the degree to and way in which articles are ratified are left to the discretion of the varying states. As discussed earlier, this flexibility has its benefits and drawbacks.

Indeed, states attempt to ratify to an adequate extent to both fulfil the treaty's objective and to avoid potential legal recourse. Most of the time, blatant ratification gaps are infrequent. If states believe they will encounter difficulties in ratifying certain provisions, they may make reservations or abstain from ratification altogether. However, with no overarching treaty authority to ensure "adequate" ratification, the end result varies. Therefore, how do we analyse the extent of Canada's implementation of this provision?

Usually, identifying gaps of inadequacies in the ratification efforts of parties is done so by examining legal precedence and other similar cases in

²⁵¹ Button (n 95) 30.

²⁵² International Maritime Organization (n 145).

which countries were found negligent or not having taken steps to adequately implement treaty obligations. In the case of Arctic search and rescue, there is a serious absence of any such cases or legal analysis.

Therefore, in trying to investigate the strength of Canada's legal SAR program, one may study Canada's so-called "efforts" as proof of intent to uphold the article in its own interpretation – Canada's due diligence. We can examine the practical implementation of Canada's SAR program to the effect of determining Canada's demonstration of due diligence.

Due Diligence

Due diligence is a concept in international law that pertains to a state's responsibility to exert efforts to secure or hinder a particular outcome.²⁵³ As a series of positive obligations, due diligence commonly features in international human rights law in which states are responsible for aspects such as prevention, protection, prosecution, and punishment regarding human rights and violations to human rights. For example, the state has a responsibility to prevent acts of violence against women to a reasonable extent. States may do this through hard law in ensuring they have reflected this positive obligation within domestic law, however they may also achieve this in other ways, such as the implementation of soft-law, guidelines, policies and procedural methods. Due diligence is trying to establish a threshold or minimum standard to meet in order to satiate the obligation. The standard of due diligence to meet however, is variable and usually undefined, with obligations directing states to take "reasonable measures" or "all appropriate measures".²⁵⁴ How do states determine the standard of due diligence to be paid? There is no exact method, however tools such as judicial rulings and case law can be used to establish a standard. However, this becomes difficult when there is a general absence of cases pertaining to

²⁵³ Joanna Kulesza, *Due diligence in international law* (Brill 2016) 148.

²⁵⁴ *ibid* 149.

the subject matter.²⁵⁵ This is the case for Arctic search and rescue. While the due diligence standard for fulfilling Arctic search and rescue obligations remains unclear, states have still taken measures to try and demonstrate their efforts to discharge liability. This is where Canada's efforts are examined as evidence of its due diligence measures.

As readily as it may be used to prove a State's efforts in fulfilling its obligations, (lack of) due diligence may also be used to establish a state's failure to act. If a state fails to comply with the standard of due diligence, the state may be ascribed legal responsibility for failing to exercise due diligence.

In examining Canada's Arctic SAR due diligence, we will be determining (1) the efforts and measures taken by Canada and (2) the standard of Arctic SAR due diligence for Canada to meet. Whether Canada has met that standard will be addressed in Chapter 6: Analysis.

Canada's Efforts/Measures

In addition to hard law and soft law, there is another category of measures that states can take as evidence of their due diligence entirely. Though neither hard nor soft law, these efforts can still make strong evidentiary points when determining state responsibility. These "other efforts" describe measures taken by Canada (both independently and in cooperation with other states and organisations) and include guidelines and recommendations, policy, and standard operating procedures (SOPs).

Other Efforts

Recommendations/Guidelines

Some international organisations are involved in the production of non-legally binding instruments. The IMO, for example, often produces recommendations through party consensus to voluntarily adopt. Canada has agreed to adopt recommendations and guidelines pertaining to Arctic SAR from a broad range of organisations, such as IACO, IMO, the Arctic Council

²⁵⁵ An increasing body of international case law pertaining to the standard of due diligence in human rights is emerging. The Human Rights Committee and the Committee on Economic, Social and Cultural Rights have been consistently producing literature towards clarifying and identifying the reasonable measures that satiate due diligence. However, in the area of search and rescue, particularly Arctic search and rescue, there is a clear absence and deficit.

and the Arctic Coast Guard Forum. Accepting and implementing recommendations from expert organisations is common practice across states in order to meet their substantive requirements, and increase the efficiency and effectiveness of their SAR programs.

Guidelines from the IMO Maritime Safety Committee are also included in this category. The IMO's Guidelines for Preparing Plans for Co-Operation Between Search and Rescue Services and Passenger Ships, for example, serves the purpose of standardising the establishment of plans for co-operation between passenger ships and SAR services.²⁵⁶ The Canadian government will often reference these many guidelines in its program and process. In certain cases, Transport Canada will even implement such guidelines into new legislation or require carriage of them by certain vessels.²⁵⁷

Canada has made efforts regarding the implementation of general SAR recommendations and guidelines, serving as important evidence of intent when identifying Canada's efforts. However, what *Arctic* specific recommendations and guidelines has Canada adopted?

Canada has long recognised the unique challenges and vulnerabilities of Arctic search and rescue, and in response often seek to adopt guidelines created from expert organisations.

The Arctic Coast Guard Forum, for example, works to promote key elements of preparedness and awareness for maritime safety in the Arctic. The ACGF has produced a series of best practices, recommendations and guidelines for Arctic SAR, mainly through the conducting of joint exercises. These recommendations fall outside of legal requirements, yet identify key areas for improvement and vulnerabilities; and it is in this area that documents generated by the ACGF may be used to fulfil operational obligations and demonstrate Canada's Arctic efforts.²⁵⁸

The current recommendations pertaining to Arctic SAR produced by the ACGF are the product of reports following joint national SAR exercises.

²⁵⁶ International Maritime Organization, *Guidelines for Preparing Plans for Co-Operation Between Search and Rescue Services and Passenger Ships* MSC/Circ.1079 (2003).

²⁵⁷ Transport Canada maintains an extensive list of regulations for which carriage requirements are applicable. For a full list of Transport Canada regulations, see <https://www.tc.gc.ca/eng/acts-regulations/regulations.html>.

²⁵⁸ Ikonon (n 17) 11.

Exercises between countries and stakeholders seem to be the centrepiece of practical cooperation, and function to "test" the SAR agreement implementation and gauge its effectiveness as a regime.

While the ACGF has facilitated a number of these exercises, joint Arctic SAR exercises have been taking place since 2012, and involve multiple countries and topics. As many as 16 live and table top exercises have been conducted with the participation of various or all eight Arctic nations (Figure 16). Canada has participated in 8 of the 16 Arctic exercises.

The reports produced from findings following these joint exercises offer recommendations on search and rescue operations, such as evacuation procedures, personnel training, national cooperation and disaster prevention to mention a few.²⁵⁹ For the most part, the joint exercises focus on particular geographic areas of the Arctic, and produce recommendations that are actionable by the various government's involved in the management of that area. The SAREx Greenland 2013 for example, focused its recommendations on infrastructure and capabilities build up in Greenland by the Danish government. The report did recommend that the responsibility for future SAREX should follow the Arctic Council chairmanship, which was "well received by Canada, the incoming chair of the Arctic Council" according to the report.²⁶⁰

The two exercises focused on Canada's Arctic areas were the Crystal Serenity live exercise (2016) and the Northwest Passage Table top exercise (2016). The Crystal Serenity exercise was in preparation for the Serenity's untried voyage through Canada's Northwest Passage. The purpose of the exercise was to explore a coordinated response to a large cruise ship incident involving more than 1,600 passengers and crew in the Arctic near the Canada-US border. The exercise identified a number of critical gaps in Canada's ability to deal with a mass rescue operation (MRO) in the Arctic, such as the lack of lifesaving facilities and navigational difficulties. In addition to a number of other recommendations that Canada implemented, the exercise recommended the use of an escort icebreaker to accompany the cruise vessel. The Canadian Coast Guard vessel the Ernest Shackleton was utilised for this purpose.

²⁵⁹ Sydnes et al (n 3) 120.

²⁶⁰ Joint Arctic Command, SAREX GREENLAND SEA 2013 Final Exercise Report (FER) 2013, 6.

Figure 16. International Arctic SAR Exercises

Table 6. International Arctic SAR exercises

Name	Place	Participant countries
Live exercise and TTX Exercise Barents, annual	Barents Sea	Norway and Russian Federation
Live exercise SAREx Spitzbergen 2016 (next SAREx in 2017)	Svalbard	Norway and academics from Canada
Live exercise and TTX Bold Mercy, every second year	Iceland	Iceland, Kingdom of Denmark and the UK
Tabletop exercise Joint Arctic SAR TTX, Association of Arctic Expedition Cruise Operators (AECO), annual	Reykjavik, Iceland	Arctic countries and AECO members
Live exercise SAREX 2012	Greenland	Kingdom of Denmark, USA, Canada, Iceland, Norway and observers from Russian Federation
Live exercise SAREX 2013	Greenland	Kingdom of Denmark, USA, Canada, Iceland and observers from Norway
Tabletop exercise CPX 2014	Kingdom of Denmark	Kingdom of Denmark and Iceland
Live exercise ARCTIC RESPONSE 2015	Greenland	Kingdom of Denmark and Iceland
Live exercise LIVEX 2016	Greenland	Kingdom of Denmark and Iceland
Live exercise Chinook 2016	Alaska, USA	USA, Canada and observers from Finland, Norway and Russian Federation
Tabletop exercise Arctic Zephyr TTX	Alaska, USA	All Arctic countries
Tabletop exercise ACGF TTX	Washington DC, USA	All Arctic countries
Live exercise Crystal Serenity 2016	Canada	Canada and USA
Tabletop exercise Northwest Passage 2016	Canada	Canada and USA
Live exercise Barents Rescue 2015	Kittilä, Finland	Finland, Norway, Russian Federation and Sweden
Annual SAR exercises	Baltic Sea	Russian Federation, Finland, Sweden, Estonia

The Arctic Council, as an intergovernmental forum for cooperation rather than an international organisation, does not have the authority legally to adopt binding resolutions that the IMO can. However, recommendations and guidelines from the various working groups can be considered an appropriate source that may inform states' SAR practices. In 2009, the Arctic Council Working Group PAME (Protection of the Arctic Marine Environment) issued a comprehensive report known as the Arctic Marine Shipping Assessment (AMSA).²⁶¹ Along with evaluating each aspect of the growing Arctic shipping industry, AMSA developed various recommendations for states to take in the furtherance of environmental protection and sustainable development. In 2015, countries provided updates on the status on implementation of the 2009 AMSA recommendations. By 2015, Canada had made wholehearted strides in the implementation of the AMSA recommendations. Most of the recommendations were focused on environmental protection. However, there were some that were concerned with shipping and search and rescue safety to which Canada made the following efforts:

AMSA Recommendations Pertaining to Search and Rescue	Canada's Efforts
I(A). Linking with the IMO	Canada is delivering meteorological and navigational warning services for the two MET/NAV areas of the Arctic Ocean for which it accepted responsibility (MET/NAV areas XVII and XVIII) to promote safe navigation in Arctic waters. Through this initiative Canada has put in place year-round standardized and coordinated coverage of these areas and has coordinated with international partners who are responsible for the three adjacent Arctic MET/NAV

²⁶¹ Arctic Council, 'Arctic Marine Shipping Assessment Report 2009' (2009).

	areas.
I(D). Strengthening Passenger Ship Safety in Arctic Waters	<p>Member governments (incl. Canada) submitted information papers to PAME's February 2014 meeting on their domestic rules and policies pertaining to Arctic cruise tourism as background and context for the AMTP.</p> <p>A Transport Canada commissioned report entitled "Strategies for Managing Arctic Pleasure Craft Tourism: A Scoping Study" was released in August 2013.</p>
II(B). Engagement with Arctic Communities	<p>The Canadian Ice Service is engaged in a three-year pilot project examining the requirements for enhanced community-based ice information for the purposes of reducing the incidence of SAR cases as well as assisting community members with their decision making regarding their work, life and cultural events on and around the fast ice surrounding their community.</p>
III(A). Addressing the Infrastructure Deficit (including Canada)	<p>The five Arctic Ocean littoral States submitted an information paper (NCSR 1/27/3, 25 April 2014) to the 1st session of the IMO's Sub-Committee on Navigation, Communications and Search and Rescue providing information on the World Meteorological Organization (WMO) Voluntary Observing Ship (VOS) Scheme in</p>

	the Arctic and encouraging increased participation in the VOS Scheme by all flag States.
III(B). Arctic Marine Traffic System	<p>Canada and Norway submitted papers to PAME's February 2014 meeting on the effectiveness of their routing and reporting measures in the Arctic Region.</p> <p>Canada and Norway submitted information on their present and planned satellite (AIS, radar and optical) and shore-based AIS capabilities to PAME's February 2014 meeting.</p>

Canada also adopts institution recommendations pertaining to SAR from the IMO, such as The IMO Recommendations & Guidelines document *Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR Facilities*. The recommendation prompts passenger ships to create contingency plans for passenger ships considered to be remote from SAR facilities.²⁶²

In addition to accepting recommendations from outside organisations like the ACGF and the Arctic Council, the Canadian government has also reflected consistent implementation of recommendations from audits and reports from its own agencies and committees. In 2013, the Canadian Government ordered and performed an internal audit which assessed three aspects of Canada's federal search and rescue program: whether federal organisations adequately oversee search and rescue activities, are ready to respond to SAR incidents, and have implemented prevention activities to reduce the number of severity of SAR incidents.²⁶³ The audit found that

²⁶² International Maritime Organization, *Guidelines for Preparing Plans for Co-Operation Between Search and Rescue Services and Passenger Ships* MSC/Circ.1079 (2003)

²⁶³ 2013 Auditor General Report (n 224).

overall, "federal search and rescue activities met the established minimum standards of readiness to respond when people in distress need assistance".²⁶⁴
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Despite this, there were two factors that the Canadian government found to pose a significant risk to readiness:

"The continued availability of sufficient numbers of trained search and rescue personnel, and the maintenance of aging equipment. Significant improvements are needed if the Canadian Forces and the Canadian Coast Guard are going to continue to adequately respond and provide the necessary personnel, equipment and information systems to deliver SAR activities effectively."²⁶⁶

The Auditor General Report highlighted the aging search and rescue aircraft force a major area of concern for Canada's overall SAR program. In 2016, the Canadian Liberal government committed \$2.3 billion for the purchase of 16 new CAF SAR aircrafts to address this finding. The contract for the new aircrafts were awarded to European firm Airbus Defence and Space and will provide "a complete, modern and technologically advanced search and rescue solution, including maintenance and support services up to 2043".²⁶⁷ This is not to say that there are not gaps in capacity.

In addition to the general findings from the Auditor General Report, the Canadian government made efforts to fulfil an Arctic specific recommendation produced by a committee which, after reviewing Canada's Northern Policy and Canadian Coast Guard Report, recommended: "Inuit, with their unique knowledge of the region, be recruited for the Canadian Coast Guard whenever possible".

To satisfy this, the Government of Canada launched the Indigenous Community Boat Volunteer Pilot Program in 2018 which was spearheaded by the Canadian Coast Guard. As a trained and qualified unit of the

²⁶⁴ 2013 Auditor General Report (n 224).

²⁶⁵ More information regarding the specifications of the audit findings are detailed in the Canada Auditor General Report Chapter 7 at: http://www.oag-bvg.gc.ca/internet/English/parl_oag_201304_07_e_38192.html.

²⁶⁶ 2013 Auditor General Report (n 224).

²⁶⁷ International Maritime Organization, *Guidelines for Preparing Plans for Co-Operation Between Search and Rescue Services and Passenger Ships* MSC/Circ.1079 (2003).

Canadian Coast Guard Auxiliary, four Arctic indigenous communities received \$1M of federal funding to buy search and rescue capable boats and related equipment. The four communities to receive funding were Rankin Inlet, Cambridge Bay, Gjoa Haven and Ulukhaktok. Canada has recently made considerable efforts to engage and collaborate with the Arctic Inuit communities to strengthen marine safety and SAR capabilities. The Honourable Dominic Leblanc, Minister of Fisheries and Oceans and the Canadian Coast Guard commented on the program:

"Members of Arctic Indigenous communities possess indispensable knowledge of local waters, and have a long history of being the first on the scene to respond to marine search and rescue incidents. Through the Indigenous Community Boat Volunteer Pilot Program, we are ensuring these communities have the tools they need to respond to emergencies, and recognizing them with a formal role in Canada's marine search and rescue system."²⁶⁸

Engaging Inuit as Canadian Coast Guard Auxiliary volunteers with is a clever way to both utilise traditional knowledge and expand the able SAR services in Canada's North. As already stands, the CCGA as a result of its volunteers and vessels handles 24% of maritime SAR taskings.²⁶⁹

In 2017, the Department of National Defence also conducted a further evaluation of the DND and CAF contribution to the National Search and Rescue Program. The evaluation produced 19 Key Findings and 10 Recommendations. Most of the key findings and recommendations were based upon the current distribution of SAR incidents and thus not directly relating to Canada's Arctic SAR. However, one key finding was the distance

²⁶⁸ Fisheries and Oceans Central & Arctic Region, 'Government of Canada Working with Arctic Indigenous Communities to Enhance Local Marine Search and Rescue' (*CISION*, 3 July 2018) <<https://www.newswire.ca/news-releases/government-of-canada-working-with-arctic-indigenous-communities-to-enhance-local-marine-search-and-rescue-687249231.html>> accessed 15 September 2018.

²⁶⁹ Department of National Defence, 'Evaluation of the Search and Rescue Services Program – Evaluation Summary' (*Department of National Defence*) <<https://www.dfo-mpo.gc/ae-ve/evaluations/16-17/6B183-summary-eng.pdf>> accessed 19 December 2018

and travel time between CAF aircraft bases and any potential Northern SAR incidents. The report did not directly recommend a solution to this problem. However, it should be evident that the Canadian government is aware of the challenges and issues within its own SAR program. In 2013, Canada has order three large-scale reviews of its SAR program; OAG Audit Report (2013), the Quadrennial SAR Review, the SAR Posture Review.

Policy and SOPs

In reflecting Canada's efforts, SAR policy originating from the Canadian government may also be assessed to determine if it meets internationally expected standards of due diligence. SAR policy is co-ordinated at the federal level under the National Search and Rescue Program. The NSP is founded on two pillars, prevention and response with the following vision:

"A Canada where the critical importance of Search and Rescue is reflected in a multi-jurisdictional approach to promoting individual, collective and organizational behaviour that minimizes the risk of injury or loss of life while maintaining timely and effective response services."²⁷⁰

Canada produces a vast quantity of internal standard operating procedures (SOPs), guidelines and best practices for its own search and rescue activities. The various branches and industries involved in Canada's search and rescue system pay attention to these self-imposed norms; using them to adjust and direct operations. The SOPs that Canada establishes are always based upon the NSP policy. The final amalgamation of maritime operational knowledge by the NSP is best represented by the Canadian SAR Seamanship Reference Manual. The Manual presents the common procedures, techniques and terminology that Canada has developed to enhance and conduct SAR operations by any combination of SAR forces.²⁷¹ The Manual also centres around standardisation, aiming to bring together under one manual all the best-known operational procedures and practices that apply to vessels involved in a SAR mission.²⁷² In 2014, the Canadian Aeronautical and

²⁷⁰ Public Safety Canada, 'National Search and Rescue Program' (n 182).

²⁷¹ SAR Seamanship Reference Manual (n 190).

²⁷² *ibid.*

Maritime Search and Rescue Manual (CAMSAR) was published to achieve a similar effect. CAMSAR provides national guidelines and standard operating procedures specific to the Canadian Federal Aeronautical and Maritime Search and Rescue system.²⁷³ The manuals are supported by information from the Search and Rescue Knowledge Management System that captures incident data from as many SAR stakeholder systems as possible.²⁷⁴

The SOP's employed by Canada's search and rescue program has a normative impact on the overall functioning of its Arctic SAR.

Canada's SAR policy is always evolving in an effort to improve search and rescue function. However, there are political pressures and forces that can impact search and rescue in the Arctic, in both negative and positive capacities. While not thoroughly considered in this thesis due to restrictions on scope, the impacts of funding, political changes and government interests can't be completely ignored. Government spending, for example, can have a marketed impact on Canada's search and rescue efforts, especially if spending is directed at Arctic specific projects.

For the most part, it is up to the individual state, and therefore state's government, to decide on the appropriate level of resources designed to Arctic SAR. Changes in government may result in different initiatives, spending and consideration towards the Arctic. In 2005, the Conservative Government under Prime Minister Stephen Harper launched an Arctic policy that placed Arctic sovereignty at the heart of the initiative. Investment into military build-up in the Arctic to help assert Canadian sovereignty over the hotly disputed Northwest Passage resulted into strategies for an Arctic naval base at the Nunavut community of Nanisivik, the building of eight Arctic Offshore Patrol Ships, and the building of the Inuvik to Tuktoyaktuk

²⁷³ CAMSAR (n 5).

²⁷⁴ The Search and Rescue Management System is meant to: "promote effective and efficient national Search and Rescue programs by the continuous improvement in the quality and integrity of shared Search and Rescue (SAR) information across Canada. Operationalizing this mission translates into working in partnership with SAR stakeholders to consolidate, aggregate, and analyse data in order to build useful tools to assist stakeholders in identifying opportunities to improve their capabilities". The system can be accessed at: https://sarkms-rssgc.hre-ehr.gc.ca/_layouts/15/SARKMS.SignIn/Custom-Signin.aspx?ReturnUrl=%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252F.

highway, which connects the Arctic Ocean to the rest of Canada's road network year-round.²⁷⁵ The Department of Defence committed to the acquisition of six Arctic Offshore Patrol Ships and the Nanisivik Arctic Naval Facility is to finish its base completion in 2019.²⁷⁶ Both military projects may have possibilities for Arctic search and rescue build-up. Although military patrol vessels and base, military vessels still maintain rescue capabilities and training to assist in possible SAR situations. Additionally, Canadian Coast Guard ships would also be able to utilise the Nanisivik facility to re-supply and SAR support if required.

The current Liberal Government under Justin Trudeau has too made commitments and efforts towards Arctic projects that may also have search and rescue results. Canada's defence policy *Strong, Secure, Engaged*, launched in 2017 commits defence to increasing focus on the Arctic. Through an investment of \$133M, the Canadian government is launching a surveillance regarding awareness of air, maritime surface and sub-surface approaches to Canada, particularly in the Arctic. The All Domain Situational Awareness aims to (in addition to surveillance) provide a "greater whole-of government awareness of safety and security issues, transportation and commercial activity in Canada's Arctic".²⁷⁷

²⁷⁵ Steven Chase, 'Myth versus reality in Stephen Harper's northern strategy' (*The Globe and Mail*, 17 January 2014) <<https://www.theglobeandmail.com/news/national/the-north/myth-versus-reality-in-stephen-harpers-northern-strategy/article16397458/>> accessed 8 November 2018.

²⁷⁶ The Maritime Executive, 'Construction Begins for Canada's Next Ice-Classed Naval Vessel' (*The Maritime Executive*, 3 May 2019) <<https://www.maritime-executive.com/article/construction-begins-for-canada-s-next-icebreaking-naval-vessel>> accessed 2 July 2019.

²⁷⁷ Government of Canada, 'All Domain Situational Awareness S&T Program' <<https://www.canada.ca/en/defence-research-development/programs/all-domain-situational-awareness-program.html>> accessed 18 April 2019.

6 Analysis

Having now examined all aspects of the Arctic SAR regime and Canada's Arctic SAR efforts, we have now a general understanding regarding Canada's Arctic SAR program. How do Canada's efforts fare? Do they fulfil the substantive obligations required of Arctic states?

This final chapter will analyse Canada's efforts in an attempt to answer these questions. Tracing first how Canada's Arctic search and program measures up to its legal responsibilities to exploring critical gaps, this section will try to determine the extent to which Canada's efforts have fulfilled its substantive counterparts through hard law and due diligence.

As mentioned earlier, Canada has taken the basic, necessary steps to codify its SAR duties into domestic hard law through the *Canada Shipping Act*, *The Criminal Code*, and *The Oceans Act*. Since no obvious gaps were identified regarding its ratification of international SAR obligations, one may conclude that Canada is meeting its substantive obligations by this measurement at the very least. Indeed, it would be difficult to argue otherwise based on the fact that there is a general absence of legal action and lawsuits pertaining to potential violations of Canada's domestic SAR hard law upon which to gauge implementation. While this may change in the future, this author argues that Canada's hard law efforts are relatively buttoned-up.

However, we know that Canada must also demonstrate its due diligence in ensuring they have taken all reasonable measures to provide search and rescue measures beyond hard law implementation. It is in studying Canada's due diligence efforts that more evidence and precedence is provided for a more comprehensive conclusion.

6.1 The Standard of Due Diligence

In the wake of numerous maritime accidents connected to the contemporary migrant crisis, European governments and intergovernmental organisations such as the United Nations Refugee Agency have recently begun producing more literature to clarify the responsibility of states in the provision of search and rescue. As a result, we possess some cases and writings to fall back on when trying to determine the standard of due diligence that must be paid by states to fully satiate their substantive obligations. However, most of the prior examples and criterion illustrating this standard pertains almost exclusively to the topic of rescuing of refugees in busy waterways. For example, in addition to the duty to render assistance and rescue persons in distress at sea, Resolutions from the IMO Maritime Safety Committee have articulated a “residual” due diligence obligation of states to ensure that rescued refugees are subsequently delivered to and disembarked in a place of safety. Workings on the standard of due diligence of states to provide search and rescue in the Arctic, however, are noticeably absent.

While the heightened risk of needing Arctic search and rescue is well known and documented, there has been little to no formal workings to specify the standard of due diligence for states to achieve with regards to Arctic search and rescue. Essentially, there are still too many unanswered questions and variables, despite future trends, predictions and current operational knowledge. For example, a general lack of shipping in the area makes SAR even more difficult, as there is a shortage of vessels of opportunity to assist. Should Canada therefore look to encourage shipping? Or would doing so increase the chances of a SAR event happening? These unanswered questions may be perhaps due to the relatively low frequency of Arctic SAR events in which these gaps are made apparent. The Arctic, for example, is not experiencing a refugee crisis that would normally prompt increased SAR workings and articulations. However, parallels between the European migrant crisis and Arctic search and rescue are still relevant. The most notable connection would be the unequal strain placed on the SAR regimes of the countries involved. Certain search and rescue areas of responsibility are experiencing greater usage by maritime traffic, and thus greater number of marine accidents occur. The strain placed on the states

responsible for search and rescue in these regions (such as the Mediterranean Sea) can cause difficulties in ensuring that states are meeting the increasing SAR demands to an adequate degree. The rising demand for search and rescue in these regions can see existing national SAR programs falling short. For Canada, the strain experienced pertains more to the difficulties of vast distances and sheer enormity of Canada's SAR region rather than the number of incidents requiring SAR assistance. The requirement of being ready and set-up to execute a SAR operation at any given moment at any place within Canada's SAR area of responsibility is taxing enough in itself, regardless of whether it is frequently needed. Bearing in mind Canada's unique SAR situation, perhaps we may think of the standard of due diligence of Arctic SAR for Canada to meet as flexible rather than stationary. Perhaps the standard is fluid and should account for such unique variables as Canada's substantial geography. By context, lots of international due diligence obligations are flexible, and vary by time, local conditions and state capacity.

Indeed, we see the notion of a flexible standard in the concept of common but differentiated responsibilities within other areas of legal studies, such as environmental law. The principle holds, for example, that although all countries are responsible for global climate change, each state has a different set of capabilities that they are able to contribute. Some of these limitations to capabilities are economic and financial (such as that of developing nations), whereas others limitations are based more on tangible causes such as limitations in infrastructure. As a result, some countries have different standards than others based on their capabilities.²⁷⁸ Regardless of being a concept of environmental law, a similar approach (or at least consideration) could be made regarding Canada's responsibility for its Arctic SAR.

Quite often, a standard of due diligence may be determined through comparing the efforts of two different states that share similar characteristics. Comparing how Sweden and Finland's Arctic search and rescue programs stack up against one another, for example, may be used to conclude a standard of due diligence that both countries should be able to meet, or at least in theory. Since both have similar economic, geographic and political

²⁷⁸ The Rio Declaration on Environment and Development 1992, *Envir. Conserv.*, 19(04), p.366.

attributes, deciding what is *reasonable* as a standard for due diligence to be met may be done through a comparison of the two states. If one country is able to achieve a certain level, the other should be able to theoretically do so as well. At least this is the technique often used by governments, organisations and legal experts to determine the responsibility of the state. However, this author argues that Canada's Arctic, particularly Nunavut, is incomparable in such a manner. In fact, this author argues that there is no internationally-defined standard of due diligence for Canada to meet with regards to its Arctic SAR due to the fact that Canada's Arctic *is* so unique; there is no comparator.

6.2 Canada's Performance

No Other Arctic Comparator

As discussed earlier, we are aware of the many different ways in which Canada's Arctic is unique with regards to SAR operations. Nunavut's geography, environment and constitution are so distinct that there is simply no comparable likeness with other Arctic states for which to compare Arctic SAR abilities. The closest likeness is perhaps between Canada's Northwest Passage (NWP) and Russia's Northeast Passage (NEP).

Both Passages exist as sea routes and pass within national territorial seas thus subject to domestic jurisdiction. Also, both Passages connect the Bering Sea with the Barents Sea (although taking opposite routes). Similar distances, navigational challenges, sea-state conditions, and operational risks all contribute to the notion that Russia's Northeast Passage might be a comparable example to Canada's Northwest Passage upon which to judge the feasibility of search and rescue standards, or how much due diligence is reasonable. Despite these similarities however, Canada's Northwest Passage has additional characteristics that may prove that these two Passages may not be so alike after all.

The Northeast Passage has been used for cargo shipping for a century, with infrastructure built-up along its course for support. Deep and navigable for a surprisingly long season despite its northerly latitude, the Northeast Passage has, and remains, the favoured commercial route of the Arctic. The development of the Northeast Passage has had a long head start on that of the

Northwest Passage, and heavy Soviet and Russian investment into shipping infrastructure has also led to an increase of extra SAR capabilities, such as better bathymetric surveying and charting, increased SAR monitoring programs and operations, military build-up (functioning sometimes as SAR units) and better communication services. Canada's NWP on the other hand, has barely been used commercially and has little to no infrastructure along its course that can provide search and rescue to the same extent. This also re-introduces the legal status issue, as Canada does not want to encourage navigation of foreign vessels and build-up as it may establish the Northwest Passage as an international strait. In the history of its entire existence, only some 290 ships (compared to the 27 ships transiting the Northern Sea Route in 2018 alone) have sailed the full Northwest Passage, for the most part alone and unassisted from federal services (with some icebreaker support notwithstanding).^{279 280} Despite similarities in latitudes and ecology, the two Passages have very distinct regional variations that contribute to differences in environmental conditions between them. The NWP experiences a much higher degree of sea-ice coverage, a shorter operational season, shallow and poorly charted areas, and little to no supporting infrastructure - all which make it less than ideal for commercial shipping compared to Russia's Northeast Passage. The Northeast Passage is also fuelled by Russia's policy in wanting to market the Northeast Passage as a navigable route with supporting services and infrastructure along the way. With the development of mining and hydrocarbons in the Russian Arctic, a means to move products and goods is thus necessary.

In addition to existing as a unique route operationally, the Northwest Passage is also politically unique. Due to the historical dramas of the 19th and 20th century exploration era, its debated contemporary status as an internal waterway, and its perpetual use and importance by Canada's Arctic Inuit, the Northwest Passage has become a symbol of Canada's Arctic for many years. As a result, Arctic policy from Canada's past and present federal governments has often centred around it. Federal programs and policy that may relate to Arctic SAR are thus sometimes tinged with the additional

²⁷⁹ R.K Headland and colleagues, 'Transits of the Northwest Passage to End of the 2018 Navigation Season' (2018) Scott Polar Research Institute.

²⁸⁰ Northern Sea Route Information Office, 'Transit Statistics 2018' (*Nord University*, 20 February 2019) <www.arctic-liaison.org/transit-statistics-2018/> accessed 22 July 2018.

motivation seeking to double as sovereignty initiatives (see section Canada's Arctic Sovereignty Issue). This is not to say that the rest of Canada's Arctic issues fall by the wayside, rather that Canadian federal policy for the Arctic is influenced significantly by international relations, for which the challenging of the legal status of Canada's Northwest Passage is a primary example.

Regardless of being the closest comparable Arctic area to other Arctic states, the Northwest Passage still maintains distinct enough characteristics to make difficult its utilisation in the determining of an adequate standard of due diligence for Arctic SAR. Even then, the Northwest Passage is only one small section of the vast Canadian Arctic. The entire extent of the Canadian Arctic should be considered when trying to illustrate how difficult Arctic SAR is to facilitate in Canada compared to other Arctic states. The Canadian Arctic has no other similar or parallel Arctic region; it is a labyrinth of waterways fraught with ice and harsh conditions.

Meeting a "Reasonable" Extent

Aware that search and rescue in Canada's Arctic cannot be compared to the SAR programs of other Arctic states in order to determine the level of state responsibility and the standard of due diligence to be paid, we must then consider what is "reasonable" for Canada. Canada has still to maintain all other substantive commitments in its Arctic in addition to SAR obligations (such as social and health facilities, communication services, defence, education, and policing for example).

With no benchmarks or guidance to determine what is a reasonable level of due diligence for Canada, the author must fall back on Canada's due diligence efforts as proof of its SAR capacity and intent. We have already examined the efforts that Canada has taken in this regard in an earlier section, studying the various procedures, guidelines, policies and soft-law in addition to its hard law efforts. Outlining the many ways in which Canada has amassed a technical and operational SAR body of work to reflect the extent its due diligence in meeting its legal obligations, the author has concluded that Canada: (1) recognises the difficulties and increased activity in its Arctic (2) recognises the need for more Arctic SAR services, and (3) takes considerable internal and external action to not only achieve the minimum

standards for SAR, but strives to achieve the highest standards for Arctic SAR according to its capabilities and limitations.

Naturally, gaps in Canada's Arctic SAR system will always exist, and improvements can be made. However, based on Canada's tendencies to self-monitor, troubleshoot, and seek out reviews on its SAR performance, such gaps are usually short-lived. Bearing in mind the limitations of this study, this author argues that Canada is demonstrating due diligence, and that due diligence *is* a reasonableness standard. Indeed, this is corroborated by the singular precedential search and rescue case concerned with a potential failure of Canada to demonstrate due diligence in the Arctic.

In August of 2010, the expedition cruise vessel M/v *Clipper Adventurer* steamed full speed onto an uncharted submerged shoal in Nunavut while *en route* from Port Epworth to Kugluktuk, and became grounded.²⁸¹ The passengers and crew were rescued by the Canadian Ice Breaker *Amundsen*, and the *Clipper Adventurer* was subsequently refloated and underwent repairs in Poland. Afterwards, the owners of the *Clipper Adventurer* sued the Canadian Government on the basis of the claim that Her Majesty, more particularly the Canadian Coast Guard and the Canadian Hydrographic Service, knowing of the presence of the shoal, had a duty to warn and failed to do so. The Canadian government denied liability, admitting that they had knowledge of the shoal some three years before the grounding. However, they denied that any duty was owed to the *Clipper Adventurer* to give warning. Nevertheless, warning was given both by means of a Notice to Shipping and by a Navigational Area Warning, arguing that the casualty was caused by the *Clipper Adventurer's* failure to update Canadian Hydrographic Chart 7777. The judgement dismissed the plaintiff's action and ordered the owners of the *Clipper Adventurer* to pay \$445,361.64.²⁸² The Court determined that the fault of the incident lay with the master of vessel for failing to seek out the notice to shipping and update the corresponding onboard charts, rather than that of the government for a failure to provide adequate hydrographical information as the owners alleged.

Interestingly, the Canadian Federal Court recognised the lack of navigational charting in the area, noting that "less than 10 percent of the vast Arctic waters of Canada have been surveyed to modern standards". However,

²⁸¹ *Adventurer Owner Ltd. v. Canada*, 2018 FCA 34.

²⁸² *ibid.*

the Court goes on to acknowledge that this is due to limitations on Canada's capabilities, specifying that "most of the surveying done in the Arctic is opportunistic by nature. The prime role of Canadian icebreakers during the short summer navigation season is, as the name implies, to act as icebreakers and to carry out search and rescue missions. Hydrographers are welcome aboard, but their surveys are not of the highest priority." This statement discharges the Canadian government from the legal responsibility to have exhaustive charting and mapping of its Arctic, which as we know, is beyond its capabilities due to Canada's scale and limitations to resources.

Despite the Court ruling that the Coast Guard did not have the duty to warn the *Clipper Adventurer* of the NOTSHIP updates regarding the shoal (the master should have sought out the available information rather than waiting to be told), the CCG Marine Communication and Traffic Service Station in Iqaluit still continuously posted the information later than the minimum 14-day broadcast, which they had no legal responsibility to do. Additionally, following the grounding, the Canadian Coast Guard committed to providing all vessels entering Canadian Arctic waters with safety information via its NORDREG vessel reporting system as of June 2012. The Canadian Hydrographic Service also established procedure so that navigational charts for Canada's Arctic are marked with reported hazards to navigation.²⁸³

This case tells us what the Federal Court of Canada deems as an acceptable level of due diligence on certain SAR matters. In this case, it was the level of charting necessary and communications of hazards.

While this singular ruling does not define all aspects of Canada's standard of due diligence for Arctic SAR, it does make two important conclusions. First, the Federal Court upholds the notion that Canada has a very distinct and challenging Arctic, and cannot be legally expected to have achieved the same standards of charting as other states that do not have similarly extreme conditions, or even the same standards as Southern Canada. Although this pertains to charting, this case still echoes the understanding that due diligence is a variable and contextual standard. Second, this case demonstrates that Canada is aware of the limitations to its capabilities, yet

²⁸³ Nunatsiaq News, 'Clipper Adventurer grounding leads to better Arctic charter: TSB report' (*Nunatsiaq News*, 26 April 2012)
<https://nunatsiaq.com/stories/article/65674clipper_adventurer_grounding_leads_to_improved_arctic_charting_tsb/> accessed 27 April 2019.

still exhibits efforts to surpass the baseline standards. In a way, demonstrating what *it* believes to be the requirements of due diligence as the authorities on SAR in its own Arctic. Taking cues from Canada to determine what it itself deems a reasonable extent may be a way to help identify the standards of due diligence for Canada in the future.

One may additionally argue that Canada is at the very least not demonstrating regression on any of its obligations; an important factor to prove Canada's intent. Taking steps to continuously improve and adapt to the changing demands of its substantive obligations.

6.3 Critical Gaps

On the basis of this research, this author concludes that Canada has adequately fulfilled its substantive obligations through hard law and through the taking of due diligence measures to a reasonable extent.

No matter the degree to which this is true however, critical gaps in Canada's Arctic SAR program still exist, and can be areas of concern both now and in the future. Throughout the length of this study, certain critical gaps have been identified and are worth mentioning in order to identify (1) where critical gaps may give rise to consequences and (2) how Canada could proceed with respects to preparing for the future of Arctic SAR.

Legal Gaps

The duty to render assistance is primarily concerned with the requirement to provide rescue assistance to those in distress at sea. However, increasingly discussed in present SAR conversations is what follows a successful rescue. Where are rescued people disembarked? And is there a residual obligation to deliver people to safety following a rescue for both ship masters and coastal states? In 2006, the IMO Maritime Safety Committee adopted two resolutions that amended both SOLAS and SAR Conventions to ensure rescued people are disembarked safely. The Resolutions specify that

“carrying out SAR operations does not completely exhaust the duty to render assistance, which extends to the disembarkation of the rescued persons in a place of safety”.²⁸⁴

These Resolutions were mostly brought about following concerns regarding the safe delivery of rescued refugees, and to ensure that states are responsible for accepting refugees and that they support ship masters in the disembarking of rescued passengers. Certain cases were recorded as having states turn away ships carrying rescued passengers for which the master is then left holding the bag. Although born out of a human rights concern, the residual obligation for states to deliver people to safety may still have bearing on Arctic search and rescue.

Take for instance the incident of the *Clipper Adventurer*, when 120 passengers rescued by the Canadian Coast Guard were unexpectedly disembarked into Kugluktuk in the middle of the night. Almost everyone in the town of 1,400 people had gone fishing. Without enough hotel rooms, the passengers had to be sheltered in the community hall with locals giving up extra blankets, pillows and food from the local store in order to accommodate the arrivals. Though only 120 extra people, the residents of Kugluktuk still had difficulties in receiving the passengers.

When news of the *Crystal Serenity*’s impending Northwest Passage cruise was first revealed, many of Canada’s northern communities voiced concern over the risks associated with a vessel of such a size. One such risk was the inability for small Inuit villages and towns to accommodate and safely shelter a potential mass inundation of 1092 passengers and some 700 crew. Some of these villages that maintain populations as low as 120 people would be unable to serve as a place of safety due to the severe shortages in shelter and food that would accompany a 1300% increase in population overnight.

Towns in the Canadian Arctic are already greatly spread out and few in number. With the potential inability to find nearby towns that can accommodate rescued passengers, or if passengers are disembarked in these towns regardless of capacity deficits, how can Canada ensure they are meeting the obligation to deliver people to places of safety? While Canada may not be able to accomplish complete infrastructure build-up across the

²⁸⁴ Maritime Safety Committee Resolution MSC.167(78) Guidelines on the Treatment of Persons Rescued at Sea (2004).

Arctic or additional rescue services in order to fulfil this residual obligation, they *do* have the ability to deny permission to large vessels with high passenger counts from undertaking such a voyage (if the Northwest Passage contains only internal waters without any international straits, as *per* Canada's position). With complete national jurisdiction and authority over the Northwest Passage, the Canadian government could have restricted voyages to smaller vessels for which they may have better contingency plans in effect in the event of a rescue situation. The *Crystal Serenity* was granted permission despite a critical gap in safety should an incident have unfolded. Even so, Crystal Cruise Lines was required to meet Canada's permitting standards for all 117 licences required of them. One of which required Crystal Cruise Line to employ a Coast Guard icebreaker escort to try and alleviate some of the concerns as a potential backup failsafe. However, with the increase in size, frequency and numbers of passenger vessels operating in the Canadian Arctic, how can Canada ensure it is fulfilling its full obligation to deliver rescued people to safety in accordance with the IMO Resolution? Is the current state of planning and preparing adequate enough for Canada to avoid possible state responsibility in such instances? In what way could the law assist? Perhaps stricter laws regarding the parameters of vessels in the Arctic could help quell such concerns. Should laws restricting the size of passenger vessels in the Arctic apply, for example, it may address the issue of meeting the IMO Resolution requiring the delivery of passengers to places of safety.

Operational Gaps

Arctic State of Readiness

The 2013 Auditor General federal search and rescue report determined that Canada's SAR system across the nation are stretched. Deficits in personnel and search and rescue assets were among the noted areas for improvement. The audit made note of what Canada's operational capacities are, and one glaring critical gap apparent in Canada's SAR organisation is the lack of search and rescue centres and assets in any of Canada's North. As it stands, large air and marine resources are rarely positioned in Canada's Arctic region. Indeed, this is partially due to the difference in incident rates between the North and South of Canada. The incident rates in the northern areas

(above 60 degrees north) have remained steady at relatively low levels, reflecting the low level of activity in the North. Hence the southerly positioning of Canada's SAR assets. Just by the numbers, the saturation of Canada's south with the majority of Canada's SAR is practical. However, this reflects low levels of activities, not low levels of risk, and does not take into consideration the severity of the Arctic conditions, even if the occurrence of SAR events is considerably lower in the North than the South of Canada. People and ships in distress in the Arctic are rarely afforded the luxury of time during emergencies to wait for assistance, especially in Arctic conditions.

Currently, SAR in all parts of Canada must meet the minimum state of readiness found in the National SAR Manual:

"The minimum state of readiness for each rescue squadron shall be one SAR aircraft of each type, on 30-minute standby during work hours and on 2-hour standby during quiet hours and statutory holidays. Primary SRUs – Canadian Coast Guard (CCG) primary search and rescue (SAR) units (SRUs), when underway, shall be capable of responding to SAR taskings immediately or shall otherwise maintain a 30-minute standby posture."²⁸⁵

Both RCAF aircrafts and CCG vessels maintain a tier-one minimum state of readiness across Canada – and this includes Canada's North. Based on program data over the past five years, the DND/CAF has met the response posture 92 percent of the time on a national basis.

While the minimum state of readiness mandates that SAR units must be deployed within 30 minutes, they still have to travel certain distances to where the emergency is occurring. For emergencies in Nunavut, aircraft units would be dispatched from JRCC Trenton in Southern Ontario. For aircrafts travelling to Nunavut from Trenton, that distance can reach up to 4,463km and require more than 8 hours of travel time. Regardless of achieving deployment within 30 minutes, rescue assistance could still take hours to reach their destination. This becomes especially problematic when considering the limited refuelling opportunities and harsh environmental conditions for those waiting for rescue. Once aircrafts reach their destination,

²⁸⁵ CAMSAR (n 5) Sec. I-2.10 (E) p.2 of 2.

they may also only have enough fuel for a limited time during which to carry out rescue operations before having to return to base.²⁸⁶

In 2011, two Inuit hunters became stranded in Nunavut's icy waters. Search and rescue technician Sgt. Janick Gilbert of the Canadian Armed Forces was part of the Search and Rescue Squadron at 8 Wing/CFB Trenton that was dispatched to Hecla Strait to search for the missing hunters.²⁸⁷ The fixed wing Hercules aircraft reached the hunters within 6 hours of dispatch from Trenton. However, due to low fuel and an inability of the fixed wing aircraft to hover or land, Sgt. Gilbert along with two other technicians parachuted into the water to provide support and lifesaving gear to the hunters while waiting for helicopters with winching capabilities to arrive from Trenton airbase.²⁸⁸ Tragically, Sgt. Janick Gilbert experienced technical difficulties with his survival suit, and drowned as a result from hypothermia after water entered his suit. The CH-149 helicopter eventually reached Sgt. Gilbert and the remainder of the rescue party four hours after they parachuted into the sea.²⁸⁹

The long distances and travel time within Canada's separate search and rescue areas of responsibilities were among some of the reasons for the death of Sgt. Gilbert. The Northern areas present a significant transit distance and risk when completely reliant on rescue support far from their region.²⁹⁰ While Coast Guard vessels have a greater chance at arriving faster due to the fact that they are usually patrolling or carrying out other activities nearby in the Arctic, it is still not guaranteed that any help will be able to arrive within the short window of time that people in distress realistically have before conditions deteriorate. Indeed, the lack of SAR assets in Canada's North remains one of Canada's largest critical gap (Figure 13.)

²⁸⁶ Crystal Cruises, the Canadian Coast Guard (CCG), Transport Canada (TC), and the Department of the Defense (U.S. Air Force), the U.S. Coast Guard (USCG), 'Northwest Passage (NWP 16) 2016 Exercise – After Action Report', <https://www.hSDL.org/?view&did=802138>.

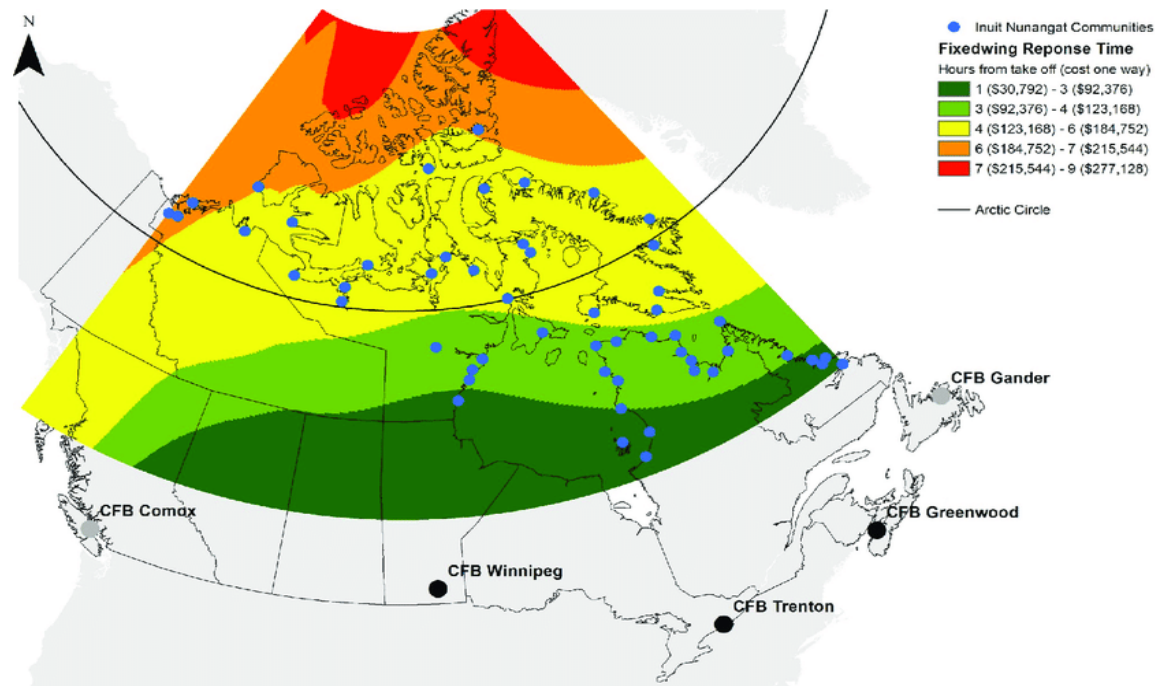
²⁸⁷ Canadian Forces Flight Safety Investigation Report (FSIR) 1010-CC130323 (DFS 2-2_ 12 November 2013).

²⁸⁸ *ibid.*

²⁸⁹ *ibid.*

²⁹⁰ Pierre Leblanc, 'Canada's Northern People Deserve Better Arctic SAR Capabilities' (*The Maritime Executive*, 10 March 2018) <<https://www.maritime-executive.com/editorials/canada-s-northern-people-deserve-better-arctic-sar-capabilities>> accessed 15 May 2019.

Figure 17. Distance and Cost of Fixedwing Response Times Across Canada²⁹¹



²⁹¹ James Clark, Tabish Dylan and Taha Ford, 'What role can unmanned aerial vehicles play in emergency response in the Arctic: A case study from Canada' (2018) PLoS ONE 13(12).

In October 2018, the federal Department of Fisheries and Oceans, along with the Canadian Coast Guard, announced the creation of a new administrative region focused on the Arctic.²⁹² The new DFO region is to reach from the Northwest Territories, through Nunavut, across Northern Quebec to Labrador.²⁹³ The region would encompass the four regions of Inuit Nunangat, the area Inuit traditionally occupied. This new region will be headquartered in Rankin Inlet, Nunavut, shifting Nunavut from its previous management underneath the “Central and Arctic” region, based in the south of Canada. The new standalone Arctic region would “translate into more Inuit-designed and Inuit-staffed programs and services, as well as better capacity for search and rescue across the North”.²⁹⁴ The Coast Guard will grow from three to four operational regions once the new Arctic region is created. The Coast Guard is yet to publicise the way in which they intent to build the capacity of search and rescue services within the new standalone region. It is worth noting that the issue of long distances may be addressed - or at least potentially mitigated - by the stationing of SAR assets within this new region, rather than only in southern Canada.²⁹⁵ Answering both to local concerns and the findings from the Auditor General’s report, the Government of Canada is seemingly attempting to address the overall issue of Nunavut’s management, including the accessibility of SAR services. No further specifications have been provided pertaining to this development, making further analysis a moot point. While this announcement seems to indicate Canada’s intent to close

²⁹² Fisheries and Oceans Canada, ‘Current issues: ministerial briefing’ (*Government of Canada*, July 2018) <<https://dfo-mpo-gc.ca/transparency-transparence/mtb-ctm/binder-cahier-1-cimb-easim-eng.htm>> accessed 22 July 2018.

²⁹³ CBC News, ‘DFO, Canadian Coast Guard create new Arctic region’ (*CBC News*, 24 October 2018) <<https://www.cbc.ca/news/canada/north/dfo-coast-guard-arctic-region-1.4876369>> accessed 22 July 2019.

²⁹⁴ Sarah Rogers, ‘Ottawa announces new Arctic regions for DFO, Coast Guard’ (*Nunatsiaq News*, 24 October 2018) <https://nunatsiaq.com/stories/article/65674ottawa_announces_new_arctic_departments_under_dfo_coast_guard/> accessed 22 July 2019.

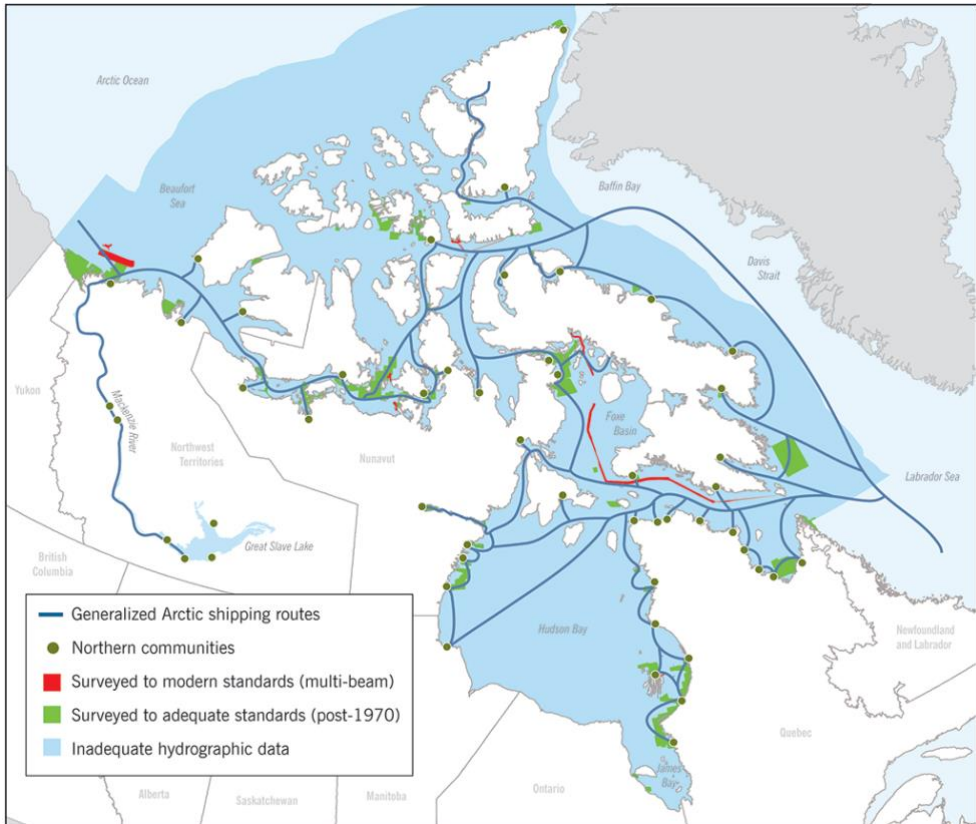
²⁹⁵ At the time of this study, no further clarification or public plans have been released by the Department of Fisheries and Oceans and the Canadian Coast Guard pertaining to this development.

certain gaps in its SAR program, further information is required for any further conclusions.

Canada's Arctic Charting and Mapping

Though the Canadian Government was discharged from having to exhaustively charted its Arctic waters in the *Clipper Adventurer* case, there are still many high-risk areas in the Canadian Arctic where charting is limited. Only a small percentage of the region has modern hydrography coverage (Figure 14). Canada has itself identified this gap in the Governor General audit of 2013, however little work has since been done to dramatically increase the amount of charting currently being undertaken by the Canadian Hydrographic Department.

Figure 18. Canada's Arctic Charting Deficits ²⁹⁶



As per Figure 17 demonstrates, many of the generalised shipping routes that re-supply vessels utilise to provision Canada's Arctic communities themselves may be adequately charted, however there is still inadequate hydrographic data along these routes and in most of the Canadian Arctic. Most of the accidents occurring in the Canadian Arctic pertaining to search and rescue are groundings, where vessels find themselves off route and founder on uncharted rocks, reefs, banks and shoals. The Canadian Hydrographic Survey estimates that about one percent of Canadian Arctic waters are surveyed to modern standards, with less than 25 percent of the paper charts in the Arctic to be considered "good".²⁹⁷ While Canada is still

²⁹⁶ 2013 Auditor General Report (n 224) Ch. 3.

²⁹⁷ 2013 Auditor General Report (n 224) Ch. 3.

making efforts to add to existing charts and hydrographic data, there is still a considerable deficit in the amount charting information. While this is essential in the prevention of grounding accidents, hydrographic data is critical to vessels coming to the aid of distressed vessels. Rescue vessels rely on charting and hydrographic data during rescue operations so that they may carry out safe rescues as to not further compound the issue by running aground themselves.

Upon the recommendation of the 2013 Auditor General's report, the Canadian government made a commitment to complete an initiative that identified important parts of the Arctic region that need to be surveyed and charted and prioritise them, in addition to develop a long-term implementation plan with cost-estimates, timelines and options that include collaboration with partners, alternative service delivery, and the use of modern technologies. The target date for which was September 2016. While the initiative was completed and delivered, the Canadian Arctic is still far behind in regards to its charting and mapping for where Canada ought to be for optimal Arctic navigation and SAR operations.

7 Concluding Remarks

As we turn towards the future, ideas about the Arctic to come are coloured by uncertainty. What will our future Arctic look like? What kind of economies and industries will emerge? What Arctic specific issues will occur with the changing Arctic environment? Certainties such as the decline in sea ice extent and the increase in marine traffic have equally uncertain counterparts; especially regarding search and rescue. Will the decline in sea ice improve accessibility for search and rescue in the Arctic? Will increased marine traffic result in more SAR capable vessels in the Arctic? In trying to determine how Canada's Arctic search and rescue program will fare in the coming decades, this thesis set out to answer one simple question: is Canada meeting its international legal requirements and obligations to provide search and rescue in its Arctic – more specifically Nunavut? Throughout the duration of this study, and by examining the many parts that encompass this topic, this author has concluded that Canada *is* meeting its international legal requirements **based on its limited capacity to do so**. This is evidenced through both hard law and due diligence efforts.

The author stresses that this conclusion is made based on important mitigating factors. Indeed, Canada is fulfilling its obligations. However, this is based on the fact that search and rescue in the Canadian Arctic is incredibly difficult. Therefore, this conclusion is made upon the consideration that Canada has its own unique standards to meet. Essentially, with no other comparative standard, Canada is meeting its obligations to a reasonable extent.

The author further concludes that Canada (1) recognises the difficulties and increased activity in its Arctic (2) recognises the need for more Arctic SAR services, and (3) takes considerable internal and external action to not only achieve the minimum standards for SAR, but to strive to achieve the highest standards for Arctic SAR according to Canada's capabilities and limitations.

In saying this, Canada's Arctic SAR performance is not without its gaps and areas for improvement. There are certain critical areas in which Canada may address these deficits. One central area is to perhaps assess Arctic SAR infrastructure and the distribution of SAR assets. As discussed in this thesis, the consolidation of Arctic SAR assets and centralised management in the south of Canada creates certain operational issues. Issues such as long transit times to emergencies in the North and a general disconnect between the events of the North and its management by divisions in the South. While the federal Department of Fisheries and Oceans, along with the Canadian Coast Guard, announced the creation of a new administrative region focused on the Arctic, the specifications of which at the time of this study are unclear. Will management of Arctic SAR be shifted from JRCC Trenton to an Arctic base? Will SAR assets be stationed in this new region to cut down on transit times, rather than positioned in the Trenton region? How might Indigenous people and knowledge be utilised in this new region? While a potential step in the right direction, the effectiveness of this development in dealing with these issues is still unclear. Further analysis following this development at a later time are required to answer these questions.

Other potential areas for improvement would be better and more comprehensive charting of Canada's Arctic to help in the prevention of future emergencies. Although time consuming and expensive, improving marine charting is relatively straight forward, and a seemingly good way to reduce SAR events with minimal additional effort.

Additionally, stricter domestic laws specific to search and rescue should also be considered. As there is a serious absence of legal cases and legal analysis specific to Arctic SAR in Canada, it is difficult to identify specific areas in which stricter laws could lead to improvement. As a suggestion, perhaps laws limiting the size of passenger vessels in the Arctic could address the potential issues associated with large-scale emergencies; such as inundation events and ensuring passengers are delivered to places of safety. Or perhaps laws which bolster or support other existing international regulations, such as further laws in line with the vessel specifications and requirements of the Polar Code. Regulations such as the Polar Code aim to create a baseline acceptable to all polar countries. With Canada's unique

Arctic environment, however, this regulation can act as a starting point upon which to implement additional laws specific to Canada's unique situation.

The conclusions of this thesis raise a subsequent series of research questions. For example, will Canada's Arctic SAR requirements change in the future? Will Canada continue to fulfil its obligations to an adequate extent with regards to the changing Arctic and increased SAR demands? Will Canada's Northwest Passage dispute ever be resolved, and how might that affect Arctic search and rescue? These questions illustrate the fact that these particular conclusions are at one singular point in time. With future developments and further research, these deductions may be highly changeable. In knowing this, this thesis may be used as a starting point in which to trace the changes and progressions of Canada's Arctic SAR performance, allowing for predictions of how Canada will cope with the uncharted waters of the changing Arctic in the decades to come.

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Appendix A

Additional international treaty articles reflecting the duty to rescue at sea principle:

International Convention for the Safety of Life at Sea (1979)

Regulation V/33

1. The master of a ship at sea which is in a position to be able to provide assistance on receiving information from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service that the ship is doing so. This obligation to provide assistance applies regardless of the nationality or status of such persons or the circumstances in which they are found. If the ship receiving the distress alert is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, the master must enter in the log-book the reason for failing to proceed to the assistance of the persons in distress, taking into account the recommendation of the Organization, to inform the appropriate search and rescue service accordingly.
- 1.1 Contracting Governments shall co-ordinate and co-operate to ensure that masters of ships providing assistance by embarking persons in distress at sea are released from their obligations with minimum further deviation from the ships' intended voyage, provided that releasing the master of the ship from the obligations under the current regulation does not further endanger the safety of life at sea. The Contracting Government responsible for the search and rescue region in which such assistance is rendered shall exercise primary responsibility for ensuring such co-ordination and co-operation occurs, so that survivors assisted are disembarked from the assisting ship and delivered to a place of safety, taking into account the particular circumstances of the case and guidelines developed by the Organization. In these cases the relevant Contracting Governments shall arrange for such disembarkation to be

effected as soon as reasonably practicable.

2. The master of a ship in distress or the search and rescue service concerned, after consultation, so far as may be possible, with the masters of ships which answer the distress alert, has the right to requisition one or more of those ships as the master of the ship in distress or the search and rescue service considers best able to render assistance, and it shall be the duty of the master or masters of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.
3. Masters of ships shall be released from the obligation imposed by paragraph 1 on learning that their ships have not been requisitioned and that one or more other ships have been requisitioned and are complying with the requisition. This decision shall, if possible be communicated to the other requisitioned ships and to the search and rescue service.
4. The master of a ship shall be released from the obligation imposed by paragraph 1 and, if his ship has been requisitioned, from the obligation imposed by paragraph 2 on being informed by the persons in distress or by the search and rescue service or by the master of another ship which has reached such persons that assistance is no longer necessary.
5. The provisions of this regulation do not prejudice the Convention for the Unification of Certain Rules of Law Relating to Assistance and Salvage at Sea, signed at Brussels on 23 September 1910, particularly the obligation to render assistance imposed by article 11 of that Convention.
*
6. Masters of ships who have embarked persons in distress at sea shall treat them with humanity, within the capabilities and limitations of the ship.

International Convention on Maritime Search and Rescue (1979)

Chapter 2 - Organisation and Co-ordination

Art. 2.1.10 Parties shall ensure that assistance be provided to any person in distress at sea. They shall do so regardless of the nationality or status of such a person or the circumstances in which that person is found

International Convention on Salvage (1989)

Article 10 - Duty to render assistance

1. Every master is bound, so far as he can do so without serious danger to his vessel and persons thereon, to render assistance to any person in danger of being lost at sea.
2. The States Parties shall adopt the measures necessary to enforce the duty set out in paragraph 1.
3. The owner of the vessel shall incur no liability for a breach of the duty of the master under paragraph

Appendix B

In addition, JRCCs will coordinate SAR units (SRUs) response to humanitarian incidents in accordance with national and regional policy and directives. For this, a rescue centre requires:

- trained staff, capable of controlling and coordinating operations; a reference library;
- a detailed plan formulating the basis of SAR operations; specific plans to meet the SAR demands of the region;
- communications equipment, which will ensure a timely alerting procedure and provide an efficient network for coordinating and monitoring SAR missions and facilities; and
- installations and equipment for the efficient coordination and control of operations to include, as a minimum, wall charts, plotting tables, SAR Mission Management System (SMMS), Electronic monitors with VTMISS, VMS feeds, and other computer aids.

Appendix C

The Competent Authorities, Search and Rescue Agencies, and Rescue Coordination Centres as listed in Appendices I through III in the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic

APPENDIX I Competent Authorities

The Competent Authorities of the Parties are:

Canada – Ministry of National Defence;

Denmark – Danish Maritime Authority;

Finland –Ministry of the Interior; Finnish Transport Safety Agency;

Iceland –Ministry of the Interior;

Norway –Ministry of Justice and the Police;

Russian Federation – Ministry of Transport of the Russian Federation;
Ministry of the Russian Federation for Civil Defense, Emergency and
Elimination of Consequences of Natural Disasters;

Sweden – Swedish Maritime Administration; and

United States of America – United States Coast Guard.

APPENDIX II Search and Rescue Agencies

The search and rescue agencies of the Parties are:

Canada – Canadian Forces; Canadian Coast Guard;

Denmark – Danish Maritime Authority, Danish Transport Authority, Ministry of Fisheries – Faroe Islands;

Finland – Finnish Border Guard;

Iceland – Icelandic Coast Guard;

Norway – Joint Rescue Coordination Centre, Northern Norway (JRCC NN Bodø);

Russian Federation – Federal Air Transport Agency; Federal Agency for Marine and River Transport;

Sweden – Swedish Maritime Administration; and

United States of America – United States Coast Guard; United States Department of Defense.

APPENDIX III Rescue Coordination Centers

The rescue coordination centers of the Parties are:

Canada – Joint Rescue Coordination Centre, Trenton;

Denmark – Maritime Rescue Coordination Center Grønnedal (MRCC Grønnedal); Rescue Coordination Center Søndrestrøm/Kangerlussuaq (RCC Søndrestrøm); Maritime Rescue and Coordination Center Torshavn (MRCC Torshavn);

Finland – Maritime Rescue Coordination Centre Turku (MRCC Turku); Aeronautical Rescue Coordination Centre Finland (ARCC Finland);

Iceland – Joint Rescue Coordination Center Iceland (JRCC Iceland);

Norway – Joint Rescue Coordination Centre, Northern Norway (JRCC NN Bodø);

Russian Federation – State Maritime Rescue Coordination Center (SMRCC); Main Aviation Coordination Center for Search and Rescue (MACC);

Sweden – Joint Rescue Coordination Center Gothenburg (JRCC Gothenburg); and

United States of America – Joint Rescue Coordination Center Juneau (JRCC Juneau); Aviation Rescue Coordination Center Elmendorf (ARCC Elmendorf).

